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Report
OF
The Ad-Hoc Committee
ON
Slaughter-Houses
AND
Meat Inspection Practices



MINISTRY OF FOOD AND AGRICULTURE
GOVERNMENT OF INDIA
1957

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CHAPTER I

Introduction

1.1 India possesses over 200 million cattle and buffaloes, 38 million sheep and 48 million goats. The annual contribution of livestock and livestock products to the Indian economy runs into several thousand crores of rupees. Meat from livestock is a valuable source of animal proteins. The contribution in this respect, especially as far as cattle are concerned, is negligible, and the number of cattle slaughtered annually for meat is only 0.9* per cent of the total cattle population. Goat and sheep meat is consumed in larger quantities, so much so nearly 36 per cent and 32.5 per cent of entire goat and sheep populations, respectively, are slaughtered annually. The annual production of meat from goats is about 1.5 lakh tons, and that of mutton about 1.1 lakh tons. Production of beef, buffalo flesh and pork amounts to 1.2, 0.9 and 0.2 lakh tons, respectively.

1.2 The total annual production of meat from all species is estimated to be over 4.6 lakh tons, valued at over Rs 76 crores. After the partition of the country, and especially in recent years due to restrictions placed in many States on the slaughter of cattle, there has been a considerable decrease in the production of beef. The production of goat meat and mutton, on the other hand, has been constantly increasing to meet the demand from the cities which are fast expanding.

1.3 In the export trade of goat skins, India has a unique position in the international market. The annual value of exports of goat and sheep skins, raw and tanned, is over 17 crores of rupees. Wool is another source of foreign exchange and brings in about 9 to 10 crores of rupees per year. India exports, on an average, per year, over 4,000 cwt. of animal casings, valued at over 43 lakhs of rupees. There are immense possibilities of increasing considerably the export of casings if suitable arrangements could be made for veterinary certification.

1.4 In the case of meat and meat products and animal casings meant for human consumption, various restrictions have been imposed by different importing countries. Exports of these are required to be accompanied by a veterinary certificate testifying that the products were obtained from animals found to be free from disease after proper ante- and post-mortem examinations. Such restrictions have particularly affected the export of animal casings to U.K. and U.S.A., with which the exporters of Indian casings had earlier developed quite a lucrative trade. Enquiries made by the Government of India some years ago had indicated that certain States, especially Madras, Hyderabad, Bhopal and U.P., were probably in a position to satisfy the requirements of U.K. and U.S.A. in this regard.

* Report on the Marketing of Meat in India, Directorate of Marketing and Inspection, 1955.

APPOINTMENT OF THE *Ad hoc* COMMITTEE

1.5 The position in respect of export of animal casings was examined by the Animal Husbandry Wing of the Board of Agriculture and Animal Husbandry in India at its meeting held at Poona in March, 1953, and it was generally concluded that it would not be possible to enforce compulsory ante- and post-mortem examinations, as required under the import regulations of U.K., U.S.A. etc. in all the slaughter-houses in India, and that it would take a long time to fulfil these conditions. The Wing recommended *Inter alia* that the Government of India might set up an *ad hoc* Committee to examine the existing standards of meat inspection prevailing in those States which had claimed that they could make arrangements conforming to the standards prescribed by U.K. and U.S.A. These recommendations were examined by the Ministries of Food and Agriculture and of Commerce and Industry. It was desired that the Ministry of Food and Agriculture might appoint an *ad hoc* Committee to examine the existing standards of meat inspection, as it was felt that it was only after this proposed Committee had carefully gone into the question of standardization of meat inspection so as to conform to the standard laid down in U.K., U.S.A. etc., that it would be feasible to institute necessary measures for meeting the requirements of the importing countries.

ANIMAL GLANDS AND ORGANS

1.6 In a communication to the Ministry of Food and Agriculture the Ministry of Commerce and Industry drew attention to the recommendations of the Pharmaceutical Enquiry Committee, 1954, which had *inter alia* considered the question of improving the supply of animal glands and organs for the manufacture of hormones and glandular products. That Committee had also stressed that valuable raw material was being wasted owing to the virtual absence of facilities for collection and storage of glands and organs in the slaughter-houses in the country. Relevant extracts from the report of the Pharmaceutical Enquiry Committee are reproduced below :-

"Hormones have increasingly come into use during recent years in modern medicine. Except in a few cases, where such hormones have been synthesised, their main source are glands and organs of slaughtered animals whose active principles they form. The most important among them are the anti-anaemic factors obtained from liver, insulin from the pancreas, pituitarine from the anterior and posterior lobes of the pituitary, and valuable enzymes like pepsin, trypsin, pancreatic etc., from the stomach pancreas and linings. These have to be removed from the carcass soon after the animals have been slaughtered and stored at low temperatures to prevent their deterioration if they have to be used for the extraction of their active principles. The hormones in the smaller glands like suprarenal, ovaries, thyroid, parathyroid, thymus and pituitary deteriorate so rapidly that within half an hour of slaughtering of the animal more than three fourths of the active principles would have been rendered useless. None of the slaughter houses in the country offer any facilities for such rapid collection or their proper storage. Normally in these slaughter-houses more than an hour lapses between slaughtering, flaying and opening of an animal. Therefore, the hormones from these small glands are invariably

lost. Some of the organs such as the liver, spleen, heart, testes, etc., which do not deteriorate so rapidly, however, are being collected by the pharmaceutical concerns from the slaughter-houses in big cities, within a reasonable time after the animals are slaughtered, and carried to their factories and preserved in cold storage. Even in these cases the slaughter-houses afford no facilities and what little is being collected and utilized is due entirely to the efforts of the pharmaceutical manufacturers who most often have to coerce the butchers to part with the glands before they deteriorate. To increase their weight they are often soaked in water, and mixed up with connective tissues and fat and this common practice hastens their deterioration.

"The manufacture of hormones and glandular products in the country is insignificant when compared to the demand and this is mainly due to the virtual absence of facilities for collection and storage of glands. Modern slaughter-houses with facilities for proper collection and storage of glands and organs should be established, to start with in cities such as Bombay, Madras, Calcutta and Delhi.

1.7 The recommendations of the Pharmaceutical Inquiry Committee were brought to the notice of the various State Governments by the Ministry of Commerce and Industry, and the necessity for implementing them immediately was impressed on them. Meanwhile, it was felt in that Ministry that the establishment of an experimental abattoir with facilities for collection and storage of glands on scientific lines under the auspices of the Central Government might be helpful to the pharmaceutical industry besides serving as a model for other slaughter-houses in the country to follow. Consequently, it was decided to include this item in the terms of reference of the *ad hoc* Committee on Slaughter-houses and Meat Inspection Practices.

CONSTITUTION OF THE *Ad hoc* COMMITTEE

1.8 The *ad hoc* Committee on Slaughter-houses and Meat Inspection Practices was constituted by the Government of India in May, 1955 *vide* their Resolution No. F. 25-2/54-LS dated the 11th May, 1955 as follows:-

1. Dr. S. Datta, Director of Animal Husbandry and Veterinary Services, West Bengal, Calcutta. (*Chairman*)
2. Shri S. R. Chadha, Director of Veterinary Services, Bombay, Poona. (*Member*)
3. Shri H. S. Bawa, Senior Marketing Officer, Central Directorate of Marketing and Inspection. (*Member*)
4. Shri V. A. Mehta, Assistant Development Officer (Food) representing the Ministry of Commerce and Industry. (*Member*)
5. Dr. K. Mitra, Assistant Director General of Health Services representing Ministry of Health. (*Member*)
6. Shri R. N. Mohan, Assistant Animal Husbandry Commissioner with the Government of India. (*Member Secretary*)

Terms of Reference :- The terms of reference of this Committee were.

1. (a) To examine the existing slaughter-houses and meat inspection practices; and

(b) to make suitable recommendations for the purpose of ensuring arrangements in such States as possess or could provide the necessary facilities for ante and post-mortem examination carried out by veterinarians so as to conform to the regulations of the U.K., the U.S.A., etc.

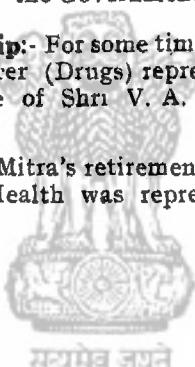
2. (a) To examine the report of the Pharmaceutical Enquiry Committee in regard to improving the supply of animal glands and organs for the manufacture of hormones and glandular products;

(b) to examine the proposal for the establishment of an experimental abattoir with facilities for collection and storage of glands to serve as a model for other slaughter-houses; and

(c) to make suitable recommendations in this regard. Subsequently, problems relating to export of meat, especially piggery products were also referred to the Committee by the Government of India.

Changes in Membership:- For some time in 1956, Dr. D. Ramaswamy, Assistant Development Officer (Drugs) represented the Ministry of Commerce and Industry in place of Shri V. A. Mehta, Deputy Development Officer (Food).

Consequent on Dr. K. Mitra's retirement from Government service in May 1957, the Ministry of Health was represented by Dr. V. K. Subrahmanyam.



CHAPTER II

Programme of Work

2.1 The Committee, in order to acquire a sufficiently comprehensive knowledge of the over-all position in the country, decided at its first meeting held in Calcutta to visit and study on the spot the existing conditions in the slaughter-houses in certain cities and towns in addition to the slaughter-houses in Madras, Hyderabad, Bhopal and U.P. where conditions were claimed to be such as would meet the requirements of U.K. regulations. Consequently, the Committee visited the slaughter-houses in Calcutta, Delhi, Bombay, Poona, Ahmedabad, Bangalore, Madras, Hyderabad, Bhopal, Lucknow, Bareilly and Moradabad.

2.2 The Committee issued a comprehensive questionnaire (appendix X-a) to all the State Governments for collecting information on the conditions prevailing and the procedures adopted in most of the recognised slaughter-houses in the country, especially those located in towns having human populations of one lakh and above. Replies were received from the States of Assam, Bengal, Bihar, Orissa, U.P., Punjab, Himachal Pradesh, Rajasthan, Bombay, Madhya Pradesh, Andhra, Mysore, Madras and Kerala.

2.3 The Committee issued a separate questionnaire (appendix X-b) to 14 pharmaceutical firms engaged in the manufacture of glandular products to ascertain the supply position of the raw materials and the difficulties encountered, together with suggestions for improvement. Replies were received from 13 firms.

2.4 During its visits to the States, the Committee interviewed witnesses who included Government officials and representatives of trade, local bodies and organisations connected with slaughter-houses, animal industry, pharmaceuticals and other related interests. The evidences recorded are given in appendix VIII.

2.5 The Committee also examined certain reports relating to the subject matters covered by the terms of reference. Important among these were (i) report of the Masani Committee on improvement of slaughter-houses in the State of Bombay, (ii) report of the Pharmaceutical Enquiry Committee set up by the Ministry of Commerce and Industry, (iii) report on the Marketing of Meat in India, issued by the Directorate of Marketing and Inspection, Government of India, in 1955, (iv) Dr. Thornton's Survey of Food Hygiene in India, (v) proceedings of the meeting of the Animal Husbandry Wing of the Board of Agriculture and Animal Husbandry held at Poona in 1953, and (vi) first report of the Joint FAO—WHO Expert Committee on Meat Hygiene.

2.6 Notes on different aspects of the subjects covered by the terms of reference were submitted to the Committee by several experts, trade representatives and others. Of these, some important notes are given in appendix IX.

2.7 The Committee visited factories etc. dealing with the Manufacture of casings and pharmaceuticals. The Committee also received notes from experts in this field. While the investigations on the items included in the terms of reference were in progress, the subject covering the export of meat, especially piggery products, was referred to the Committee by the Union Ministry of Food and Agriculture who had been requested by a number of traders to devise ways and means for facilitating export of these products to U.K. and certain other European countries. Consequently, the Committee inspected the factories manufacturing piggery products at Calcutta, Delhi and Aligarh. The reports covering these are included in Appendix V.

2.8 The Committee has held several meetings. These meetings were usually combined with visits to slaughter-houses etc. and were arranged in important towns covering different regions of the country.

2.9 The Committee has collected data covering 391 slaughter-houses in the States. This data has been analysed and reproduced in the form of various tables given in appendix XI. The Committee is confident that the visits and enquiries made and the data collected and studied have provided fairly extensive and reliable information on the subject under report.

2.10 It may be recalled that the Committee was set up mainly to examine the question of export of casings *vis-à-vis* the restrictions imposed by the Governments of U.K. and U.S.A. The Committee felt that the requirements of importing countries, though apparently few, in reality covered the entire realm of meat industry. No certificate can be issued to the effect that the product is derived from an animal found to be free from disease at ante and post-mortem examinations unless the entire procedure involved in carrying out these is thoroughly scrutinized. Further it was observed that the type of slaughter-houses, their location and construction and availability of the necessary facilities had a direct bearing upon the efficiency of these examinations. The Committee, therefore, examined all these aspects in detail as the question of casing could not be considered in isolation from other aspects. The observations covering the important aspects of the meat industry, which have a direct bearing on the question of export of casings and collection and storage of glands and organs, are recorded in the report.

CHAPTER III

Slaughter-houses

3.1 There are innumerable slaughter-houses in India catering for the meat requirements of the urban as well as rural populations. Of these, scarcely 10 per cent or so can be classified as recognised or licensed slaughter-houses. Slaughtering of animals is carried out in unlicensed private premises in most rural areas and certain urban areas, and meat is either consumed in the household or marketed. Animals are also slaughtered by individuals during festivals and as religious rituals. This is often regularised by special permits, which have to be applied for. Majority of the recognised slaughter-houses are owned by municipalities and local bodies. A few of the firms engaged in the production of piggery products have their own slaughter-houses.

TYPES OF SLAUGHTER-HOUSES

3.2 In almost all towns there are separate slaughter-houses for cattle and buffaloes, for sheep and goats, and for pigs. In some towns there are combined slaughter-houses with separate sections for large animals and for small animals. Several large towns have more than one slaughter-house for sheep and goats. The multiplicity of slaughter-houses has also been necessitated by religious sentiments of different communities. Meat of animals slaughtered by the *halal* method is taboo to the Sikh community. Therefore, there are separate *halal* and *jhatka* slaughter-houses in many towns.

ADMINISTRATION AND SUPERVISION

3.3 The administration and organisation of slaughter-houses differ but slightly from place to place. Most of the licensed slaughter-houses are owned and administered by municipalities and local boards. The administration of slaughter-houses, however, cannot be compared to that of other public utility services like electric supply, water supply etc., all phases of which are usually under the complete control of the local administration. In the case of slaughter-houses, generally speaking, the building is owned by the municipality, cantonment board or the local body, and essential services like housing, lighting, water supply etc., are made available. With the exception of very few slaughter-houses, where slaughtering is done by municipal employees, all animal slaughter is carried out by the butchers themselves or by their employees, who have licences granted to them by the municipalities. Similarly, the flayers are the employees of the butchers and contractors, and the gut washing is done by the dependants or employees of the butchers or contractors. The personnel employed by the municipalities are varying numbers of such staff as superintendents, veterinary officers, sanitary inspectors, clerks (for collecting fees), chowkidars, *bhishties*, sweepers etc.

3.4 Entry to slaughter-houses is not always strictly regulated and practically any person may walk into the slaughter-houses during

the working hours. The Committee saw many unauthorised and unconnected persons loitering about unchecked in the slaughter-house premises, and these included many women and children, some of whom assisted their elders in the work following slaughter. In many slaughter-houses there were no arrangements to keep out dogs, vultures and crows, and they had free entry into the slaughter-houses and were seen biting and pecking at the carcasses.

FINANCE

3.5 As stated above the slaughter-houses are controlled and financed by the municipalities and local boards, and these bodies are responsible for their construction and maintenance. Despite the fact that the slaughter-houses are very good sources of income to the municipalities etc., chiefly through collection of fees for slaughter, the annual expenditure on up-keep, repairs and provision of necessary services and facilities is in no way commensurate with the income derived therefrom. If a fair proportion of the income derived from the slaughter-houses was spent on their improvement and efficient working, there is no reason why the slaughter-houses should remain in such neglected state as they are at present.

3.6 Slaughtering fees charged vary from town to town, but they are usually a few annas for sheep and goats and 1-2 rupees or more for cattle and buffaloes, except in Bombay where the slaughtering fee per buffalo is Rs 15. The Committee felt that in many cases the fees charged were unreasonably low and could be appreciably raised without difficulty.

LOCATION

3.7 Most of the existing slaughter-houses were constructed some 30-50 or more years ago, those at Tangra in Calcutta and Bandra in Bombay being more than 50 years old. At that time they might well have been at reasonable distance from human habitation but, with increasing urbanisation and consequent rapid growth of the cities, almost all of these have now come within or very close to the areas of human habitation. This has resulted in many protests from the inhabitants of the neighbouring areas, who have complained of the unsightliness of the slaughter-houses and the ancillary trades, bad smell, nuisance of flies, scavenging animals and birds, and even of pieces of meat and slaughter-houses refuse being dropped in their compounds by vultures etc. Moreover, animals driven to the slaughter-houses have to traverse through thickly populated areas, and this is objectionable to, and is even interfered with at times by, certain sections of the population. At the same time, it has precluded the expansion and improvement of these slaughter-houses, which has become necessary with the greatly increased number of animals slaughtered there to meet the increasing demand for meat. A couple of slaughter-houses were observed to be located on elevated sites. This had the advantage of good drainage, but suffered from inadequate supply of water due to low pressure in water mains. In some places the approach road to the slaughter-houses was low-lying, badly kept and during monsoon was submerged under water, making access to the slaughter-houses difficult.

CONSTRUCTION

3.8 Since most of the slaughter-houses were constructed some decades ago, they are now out-dated and out-moded and have practically outlived their usefulness. Moreover, they are no longer commodious enough to handle the very greatly increased number of animals slaughtered there nowadays. For example, the Bandra slaughter-house in Bombay was originally designed for the slaughter of 50 cattle and 500 sheep and goats per day, but these numbers have now increased to over 200 cattle and buffaloes and 2,500-3,000 sheep and goats, respectively.

3.9 The general construction of the slaughter-houses, with few exceptions, has been found to be lacking in proper sanitation, ventilation, drainage and facilities for carrying out proper slaughter and post-mortem examination. The pattern of construction, the nature and extent of accommodation, and other essential requisites vary widely from slaughter-house to slaughter-house. Only few slaughter-houses are fairly well constructed on more or less scientific lines, and provide reasonable facilities for conducting the various pre-slaughter and post-slaughter operations, limited only by the abnormal degree of congestion nowadays. There are others which consist of only an uncovered yard enclosed by a wall a few feet high. The walls and flooring were usually found to be defective, and even simple and comparatively inexpensive repairs had not been undertaken. In some slaughter-houses conditions were so bad that blood etc. was found accumulated in crevices and beneath the loose stone slabs of flooring giving rise to very offensive odour. Quite a number of slaughter-houses had leaking roofs. The ventilation was generally defective; and in hot weather the heat and humidity emanating from the carcases, wet floors and walls caused considerable inconvenience to the workers and effected the keeping qualities of meat. A few slaughter-houses have been provided with wire-netting etc. to keep away birds and flies, but the repairs are so badly neglected that there is perhaps not a single slaughter-house in the country which can be said to be completely bird-and fly-proof.

FACILITIES FOR SLAUGHTERING AND DRESSING

3.10 The slaughtering space in most slaughter-houses was insufficient, and in many there were no partitions and booths, so that animals were slaughtered in the sight of other animals awaiting slaughter, and carcases, especially of sheep and goats, were often heaped on top of one another immediately after slaughter. The space necessary for the dressing of carcases was also usually meagre. Arrangements for hoisting the carcases for facilitating complete bleeding out and flaying and dressing, such as hooks and pulleys, were either absent or insufficient and defective. In the absence of proper or adequate hoisting arrangements, the carcases had to be flayed on wet and badly soiled floors. Besides, the floor space was totally inadequate. Only a few slaughter-houses had separate compartments and proper tanks for washing the guts. In many slaughter-houses guts were being washed under unhygienic conditions.

WATER SUPPLY, DRAINAGE, LIGHTING ETC.

3.11 Ample running water is an essential requisite for every slaughter-house. Generally speaking, water supply was found to be inadequate,

and water points were not sufficient in number and often these were not conveniently placed. In some slaughter-houses there were no water pipes laid on, and only scanty supplies of water were made available through *bhishties*.

3.12 In most towns, slaughtering is done during the early hours of the morning before daylight and also in the evening when visibility is poor. Efficient lighting arrangements are essential for slaughtering, flaying, dressing and for ante- and post-mortem examinations. Not all urban slaughter-houses, however, have been provided with electricity, and work has to be managed with a far too inadequate number of kerosene oil lamps, which generally give only a dim light and are seldom kept in good working condition.

3.13 Efficient drainage and proper arrangements for collecting separately, all blood, washings etc. are very important requisites in slaughter-houses for maintaining cleanliness and good sanitation and for ensuring maximum utilization of blood. These were found to be defective to varying degrees in majority of the slaughter-houses visited.

LAIRAGE

3.14 Animals for slaughter arrive at the slaughter-house at least some hours before slaughter and are kept in some resting shed on the premises where they are also subjected to ante-mortem examination. Rest before slaughter for at least 12 hours is very desirable, as it improves the keeping quality of meat by facilitating thorough bleeding. It also allows time for careful ante-mortem inspection, apart from humanitarian grounds. This shed should be sufficiently commodious to permit the animals being secured and examined individually, well constructed to afford protection against sun and rain, and provided with watering troughs and ample drinking water. With very few exceptions, these arrangements were generally unsatisfactory and in places the conditions were deplorable. In certain slaughter-houses there was no arrangement for the supply of drinking water to animals. In others, the lairage was without any roof, flooring or even drainage, and the animals awaiting slaughter had to stand knee-deep in mud and slush in the rainy season, with the result that they could not move about and some very weak animals died. The location and construction of some resting sheds were such that the animals awaiting slaughter could see the slaughtering.

CHAPTER IV

Production and Inspection of Meat

4.1 The meat for human consumption in India is derived mainly from goats, sheep, cattle, buffaloes and pigs. Rarely, certain other species of animals, e.g. camels in Hyderabad, are also slaughtered for meat. Goat meat is much more popular than mutton. Cattle and buffaloes are slaughtered for supplying the demands of Muslim and Christian populations. The slaughter of cattle has been prohibited in certain States, and in other States only animals certified by a Government veterinary officer as unfit for breeding and work are allowed to be slaughtered. Certain States e.g. Bombay have fixed quotas for individual towns for the slaughter of cattle and buffaloes. Slaughter of cows-in-calf and of those with calves at foot is prohibited through out the country. In West Bengal, however, during a Muslim festival permits are issued for the slaughter of cattle irrespective of the age and utility of the animals.

SUPPLY OF STOCK

4.2 The supply of animals for slaughter is drawn almost entirely from rural areas, especially in the case of goats and sheep. Most city cattle and buffaloes sooner or later find their way to the slaughter-house, in places where slaughter of these species is allowed and when they can no longer be profitably maintained. The largest amount of slaughter takes place in cities with large human populations and the major proportion of animals, especially goats and sheep, are driven on foot to the slaughter-house or transported in lorries or by rail. In some cases the distance travelled on foot exceeds 50 or even 100 miles. In the case of transport by rail the wagons are often not supplied in time, and this results in unnecessary delay at rail-heads, where there are no facilities for housing, watering and feeding. At times the wagons loaded with live-stock are stranded at out-of-the way stations, and some animals die on the way due to starvation and lack of water. The railway wagons generally used for the transport of meat animals are made of iron sheeting and are ill-ventilated and thus become unbearably hot during summer and cold during winter leading to deaths. In the case of animals transported by lorries, over-crowding is the rule. The cumulative effect of all such difficulties is that, many animals reach the slaughter-house in an exhausted and semi-starved condition. It was also pointed out to the Committee that, in order to evade the ban on slaughter of useful cattle some butchers at times resorted to malpractices of various kinds for disabling the animals and making them appear unserviceable.

4.3 The animals meant for slaughter are either transported direct to the slaughter-houses or the local cattle market, which is generally situated within a reasonable distance from the slaughter-house or, as in some towns, quite adjacent to it. At some slaughter-houses animals on arrival have to wait for a few hours in the lairage, where they are subjected to some sort of antemortem examination. In others this practice is not followed.

ANTE-MORTEM EXAMINATION

4.4 Proper veterinary examination of all animals before slaughter is essential to ensure that they are not suffering from any disease and are in a satisfactory state of health. Moreover, there are febrile conditions which cannot be detected on post-mortem examination. There are also diseases which are communicated from animals to human-beings by contact. Ante-mortem examination, therefore, is necessary for safeguarding the health of the consumer as well as of the butcher.

4.5 Unfortunately, in none of the slaughter-houses is the ante-mortem examination done with reasonable degree of thoroughness, in spite of the fact that almost all municipalities etc. have insisted on it in their rules and regulations. The main reason for this is that the technical staff employed is inadequate for the purpose and at some places it is non-existent. Moreover, conditions of lairage are generally such that it becomes very difficult to conduct a thorough ante-mortem examination. However, the Committee observed in only one slaughter-house at Bangalore that a narrow passage was provided connecting the waiting shed and the slaughter-hall which facilitated inspection of individual animals as they were being led for slaughter.

4.6 The number of animals rejected on ante-mortem examination is negligible and records of such animals are seldom maintained. Even where some records are maintained, the reasons for rejection are either not stated or not classified in the proper manner. On the whole, it appeared to the Committee that in many slaughter-houses the inspection before slaughter was largely for the purpose of collecting fees rather than for ante-mortem examination.

METHOD OF SLAUGHTER

4.7 The most common method employed for slaughtering animals in India is the *halal* method, and this is the only method acceptable to the vast majority of the butchers who belong to the muslim community. In this method the animal is secured, usually on the ground and the blood vessels of the neck are severed by a clean sweep of a sharp knife accompanied by incantation of some verse from the *quran*. The animal is then left to bleed out before it is flayed and dressed.

4.8 Another method followed by butchers of the Sikh community and certain other classes is the *jhalka* method, in which the sheep or goat is secured, usually by a rope looped around its horns, to a heavy wooden block or pole and the head is completely severed by a single stroke of a sharp broad and heavy blade.

4.9 A method adopted in certain places is the Jewish method (*Schechita*) which does not materially differ from the *halal* method, but the slaughtering is done by the *rabbi*.

4.10 Pigs are usually slaughtered by making a sharp incision at the base of the neck just anterior to the sternum and immediately afterwards the knife is thrust into the chest and the heart is pierced. The pig is then allowed to bleed into a drain. Subsequently it is removed and immersed into a large vessel of hot water to facilitate removal of bristles.

4.11 None of these methods of slaughtering is however, preceded by stunning to render the animal insensible to the pain caused during and following the process of cutting the throat. In at least one pig slaughter-house (Madras) there were arrangements for stunning pigs electrically before slaughter, but the practice had been given up some years ago and the apparatus was lying unused and out of order.

4.12 From discussions which the Committee had with the butchers and others it was evident that any stunning etc. before slaughter by the *halal* method would not be acceptable to the muslims, though in certain other countries the mullas, including the Imam in London, have declared that stunning before slaughter by the *halal* method would not render the flesh unholly for muslim consumption.

FLAYING AND DRESSING

4.13 Since mechanical devices for hoisting the carcases of large animals and hooks for hanging carcases of small animals are either lacking in most slaughter-houses or defective or insufficient in others, most flaying and dressing operations are done on the floor, which is frequently soiled with blood and ingesta. Moreover, owing to majority of the slaughter-houses being very much over-crowded, the main slaughter-hall is often inadequate for the purpose, so that many carcases have to be flayed and dressed outside in the open, where they commonly attract flies, crows, vultures and dogs. To facilitate removal of sheep and goat skins, the unhygienic method of inflation by the mouth is practised by some butchers.

POST-MORTEM EXAMINATION

4.14 The object of post-mortem examination is to detect carcases, parts of carcases and organs which may be diseased and thereby rendered unfit for human consumption. This is a highly skilled job and can be entrusted only to veterinary and medical officers or properly trained sanitary inspectors. It is true that some slaughter-houses are staffed with one or more whole-time veterinary officers, and many others are attended by Government veterinary officers engaged on a part-time basis. In some places one veterinary officer was entrusted with inspection work at more than one slaughter-house, operating during the same hours and often situated far apart. Many slaughter-houses have only a sanitary inspector for the job, who is generally not adequately trained for the work; and many others do not have even a sanitary inspector.

4.15 Satisfactory post-mortem examination requires good training and skill on the part of the examiner, proper facilities for conducting the examinations, and adequate time for the purpose. The number of inspecting staff, however, is far below the optimum requirements, and the number of animals slaughtered is so large and the facilities so meagre that the post-mortem examination that is conducted in even the better-class slaughter-houses is only perfunctory. Proper post-mortem examination requires a systematic procedure by which each carcase is examined individually and part by part in some convenient order. The practice commonly followed in dressing, especially of carcases of large animals, is such that the

internal organs are removed away from the rest of the body, and consequently it becomes difficult to identify carcasses from which those organs were removed. It was a great surprise to the Committee to find that hardly any organs and parts, let alone whole carcasses, were condemned on post-mortem examination, particularly in view of the known high incidence of diseases among livestock. Proper records of condemned organs and carcasses are generally not maintained. Suitable arrangements e.g. incinerators or rendering-down plants for destruction or utilization of condemned carcasses, organs etc. are generally lacking. In some places it was observed that such rejected parts were being fed to dogs or were left to be picked up by vultures. On the whole, the Committee noticed an attitude of general complacency with regard to post-mortem examination.

TRANSPORT AND MARKETING OF MEAT

4.16 Various means are employed for transporting the meat from the slaughter-house to the market. In only very few towns, e.g. Bombay and Bangalore, it is transported in covered, fly-proof motor vans, and the municipality makes some reasonable charge for this service. In most places however, meat is transported in an imperfectly covered condition in tongas, hand-carts, bicycles and even in baskets carried on head, with the result that the meat so transported frequently becomes soiled with dirt etc.

4.17 Only a few of the large towns have well organised and well constructed markets, special sections in markets, or shops meant exclusively for the sale of meat. In most towns meat is sold at a number of shops scattered all over the town, and the general conditions obtaining there are far from hygienic. In some places the Committee saw meat being sold in unclean and fly-infested surroundings on the slaughter-house premises or adjacent to it.

STORAGE OF MEAT

4.18 Generally speaking, it takes a few hours from the time of slaughter to the sale of meat, though the bulk of it is sold fresh on the day of the slaughter. The slaughter timings are so adjusted in certain towns that the morning produce is sold during the day and the evening produce is sold on the following morning. Being a perishable food article, liable to contamination and consequent decomposition, it does not always remain in a whole-some state up to the time of the sale, especially during hot weather. In a country like India it is necessary that there should be cold storage facilities not only in the slaughter houses, especially for storing animal organs and glands meant for preparation of pharmaceutical products, but also in the markets where any unsold meat may be preserved for sale on subsequent days. Such cold stores have been set up by municipalities in Bombay and Madras for preserving meat and other food articles, but they are yet a rare feature in the Indian markets.

CHAPTER V

Slaughter-house By-products

5.1 Production of meat yields a number of edible and inedible by-products. Important among these are hides and skins, horns and hoofs, non-edible offals, fat and blood. Some organs, like liver, kidneys and testicles, are used for human consumption. Others, like trachea and lungs, are sold at very low price and are consumed by the poorer sections of the community. Some of these offals are also sold for feeding dogs.

5.2 The development of meat-packing industry in more advanced countries has led to the full utilization of all parts of the animal body, and absolutely no material is allowed to be wasted. In the U.S.A. for example the by-products of the meat industry today account for nearly one-sixth of the total value of meat produced in that country. Such maximum utilization of by-products and so-called slaughter-house wastes in western countries has made it possible to pay an increased price to live, stock producers and to sell the finished products to the consumers at a cheaper price.

5.3 In India, most of these materials are allowed to go waste and are either not utilized or full benefits are not derived from them. In some slaughter-houses one or more of these are processed and made use of. Even this ill-organised effort has led to great economic benefits through utilization within the country and also by way of foreign exchange earnings through the export of these by-products.

Guts

5.4 Intestines form the greater part of the alimentary canal of the animals. Normally, an average cow or ox yields roughly 36 ft. length of large intestines and 140 ft. of small intestines. The length of intestines in the case of sheep and goats is about 20 ft. and 80 ft. for large and small intestines, respectively. After slaughter, these are removed, cleaned of fat etc., washed with water, dried, processed, and rolled into hanks of lengths extending up to 200 yards.

5.5 The guts of cows and oxen are processed and packed mainly for export as casings to be utilized in manufacture of sausages. The export of these is in the hands of a number of firms which obtain their supplies largely from urban slaughter-houses. Buffalo guts are not much utilized.

5.6 The sheep and goat guts are comparatively thin and fragile and are partly utilized within the country for production of musical instrument string, tennis and badminton racket gut etc. The guts meant for use in rackets are salted. The bulk of sheep and goat guts are, however, exported to Spain, Switzerland, Portugal and other countries mainly for industrial use and partly for sausage-making. Only guts of large-sized animals, especially hill sheep are suitable for the latter purpose. For the manufacture of cat-gut for surgical use, the guts are completely processed in India but they are sent abroad, especially to Switzerland, for sterilizing, grading and pricing, as no arrangements for these exist in India. The Committee, however, understands that a private firm in India is now planning to produce sterilized cat-gut within the country.

5.7 Before the partition of the country the sports goods industry was mostly concentrated at Sialkot in the Punjab. After the partition, new industrial centers at Meerut, Agra and Jullundur are utilizing these products on cottage-industry basis. The number of persons engaged all over the country in the collection, proceeding, rolling, pressing and other phases of gut industry runs into thousands. A number of firms have taken up the business of exporting guts and casings to foreign countries. The total production of guts in India is as follows* :-

(i) Sheep and goats	...	3,67,994 md.
(ii) Cattle	...	58,676 md.
(iii) Buffaloes	...	46,556 md.
(iv) Pigs	...	13,463 md.
	Total	4,86,689 md.

About 75 per cent of all guts are produced in the villages on cottage-industry basis, the remaining 25 per cent coming from urban slaughter-houses.

PROCESSING

5.8 The guts are required to be removed from the carcases immediately after slaughter. These are then cleaned of the fat and ingesta and washed thoroughly. The best guts give a pinkish shade, which indicates that the product has been handled efficiently. With delay in cleaning, the colour changes into grey, indicating poor quality of the guts. In case cleaning is considerably delayed, the guts become black in colour and cannot be put to any further use. Only properly washed and cleaned guts fetch good price.

GLANDS AND ORGANS

5.9 While all edible parts of a carcase are generally utilized for human consumption, there are a number of organs and glands which are particularly valuable for the manufacture of hormones and other pharmaceutical preparations for medicinal use. The more important among these are the liver, pancreas, testicles, thyroid, parathyroid, pituitary and stomach. Bile and blood are also frequently collected and utilized in various ways. At present only a few of these glands etc. are being regularly collected and utilized for this purpose in India. The huge number of animals belonging to different species that are slaughtered every day all over the country offers vast potentialities for manufacturing within the country a large variety of glandular preparations, most of which are at present being imported from foreign countries in vary large quantities.

5.10 The only organ which is being more or less regularly collected from the slaughter-houses in India is the liver, especially of cattle and buffaloes, which is utilized for the preparation of liver extract by a number

* Directorate of Marketing and Inspection, Ministry of Food and Agriculture (Dept of Agri.), New Delhi.

of pharmaceutical concerns located in large towns, especially Bombay. These firms are also receiving regular or periodical consignments of liver collected from slaughter-houses in other towns, like Ahmedabad, Hyderabad, Poona, Madras etc. and transported by rail in metal containers with ice. One Bombay firm was reported to be collecting daily about 1,200 lb. of bovine liver from slaughter-houses in Madras and the surrounding areas, putting them overnight in cold storage at the Moore Market, transporting to their local factory the following morning, where the livers were minced, partly processed, and the concentrated extract flown to Bombay.

5.11. These glands and organs are the property of the butchers. The prices vary from time to time. The average price of local bovine liver in Bombay was said to be 10 to 12 annas (62 to 75 nP) per pound and of that from mofussil areas about 6 to 9 annas (37 to 56 nP) per pound. The cost of the pancreas was about 3 annas (19 nP) per gland. The pituitary is purchased at 1 to 2 annas (6 to 12 nP) per gland, and the thyroid at $\frac{1}{2}$ to $\frac{1}{3}$ anna (2 to 3 nP).

5.12. The nature of these glands and organs, and of the preparations that are manufactured from them, is such that the glands and organs have to be collected and processed as quickly after slaughter as possible to avoid deterioration. The butchers have to be persuaded to remove these organs from the carcases expeditiously. They have then to be put into cold storage pending their transport in bulk to the factory. Certain organs, like the pituitary, have to be preserved under deep freeze conditions. Such facilities are not available in any of the slaughter-houses in India, and difficulties are also experienced in coaxing the butchers towards expeditious removal of the glands and organs.

HIDES AND SKINS

5.13. Hides and skins are probably the most valuable by-products of the slaughter-house. It is true that, especially with the introduction of ban on cow-slaughter in many States, majority of the hides, i.e. skins of cattle and buffaloes, are from animals dying naturally ('dead' or 'fallen' hides) all over the country and that only a small proportion of the hides now comes from the slaughter-houses ('slaughtered' hides). In the case of sheep and goats, on the other hand, almost all skins are from the slaughter-houses.

5.14. In most slaughter-houses, flaying of carcases is done by the butchers themselves or their employees, who are usually not licensed and continue to use primitive tools and defective methods. The majority of the hides produced in the Indian slaughter-houses are of comparatively poor quality and are commonly damaged by cuts etc. caused by defective flaying. The whole work of flaying the carcases in the slaughter-houses is done rather hurriedly, mostly on the floor, which is frequently soiled with blood and ingesta. Very few slaughter-houses are equipped with hoisting devices, and even where these exist they are often inadequate, so that the butchers have to resort to flaying on the floor.

5.15. For preserving the quality of a hide it is desirable that flaying should be done and the preliminary treatments like washing, salting etc.

commenced as quickly after slaughter as possible. Generally speaking however, hides and skins are heaped in the slaughter-houses for hours together before they are removed for such treatment. Hide and skin curing yards are not everywhere attached to the slaughter-houses, and several hours elapse before the hides and skins are subjected to further treatment. As there are no cold-storage facilities available even in the bigger slaughter-houses for keeping the hides and skins, certain amount of decomposition sets in, thereby depreciating their quality.

5.16 Certain States, such as U.P., Bombay, and West Bengal, have from time to time instituted special training courses in the art of flaying and curing of hides and the use of improved tools. In U.P. a peripatetic party used to go round the slaughter-houses turn by turn and to instruct the flayers in the art of better flaying, and this measure did bring about considerable improvement.

5.17 Grading of hides and skins is not generally practised in India. Moreover, in many parts of the country the hides are sold on bulk rates on a forward-contract system and the flayer is paid at some fixed rate for each hide flayed by him, irrespective of quality and the efficiency of flaying. Consequently, the flayers do not take any precautions against defects caused by inefficient flaying. Damage caused by defective flaying has been estimated to decrease the value of the hide by at least 20—25 per cent. The total loss to the country caused by inefficient and defective flaying is very great indeed. As hides and skins are exported to many foreign countries in very large quantities, this loss means not only a national loss but also a loss in foreign exchange.

5.18 The prices of hides and skins vary from State to State and from time to time. In Bombay, the Committee was informed that a cattle hide usually fetched about Rs. 15—20, and the buffalo hide between Rs. 30 and 35.

BLOOD

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5.19 Blood is another valuable by-product of the slaughter-house. It is of considerable value and can be put to a variety of uses, as manure, blood-meal for feeding animals, human food mixed with minced meat for sausages, and a variety of preparations for medicinal and industrial uses, such as preparation of albumen for glueing of ply-wood, dyeing of textiles and dressing leather before dyeing.

5.20 Generally speaking, blood is regarded as the property of the Municipality or local body that owns the slaughter-house. In certain slaughter-houses no efforts whatever are made to collect and utilize the blood. In certain others it is collected and sold to a contractor; but even here the system of collection is not free from defects and the blood is not utilized to the maximum advantage. Separate bleeding compartments and special bleeding rails are usually non-existent in the slaughter-houses in India. Blood is commonly allowed to run into the drains, from where it passes to a collecting pit. In some of the smaller slaughter-houses it is often collected into buckets directly from the slaughter-hall

drains. The blood collected is seldom free from admixture of dirt, ingesta and other slaughter-house washings.

OTHER BY-PRODUCTS

5.21. The other by-products of slaughter-houses include fat, horns and hoofs, bones trimmings, wool, hair and bristles. These can be utilized for preparing a large variety of products for industrial and other uses. The horns and hoofs can be used for preparing neatfoot oil for use in the leather industry, glue, and a variety of materials like buttons, combs etc. They are also used as fertilizer. Animal fat is used in a variety of industries for lubrication etc. and for impregnating leather and making it water-proof, besides its use for soap-making. The trimmings can be used for manufacturing edible and industrial gelatin, glue, manure, and manufacture of leather boards. Ingesta can be used as manure. Cow hair can be used for making felts, and goat hair for stuffing and other similar purposes. Pig bristles are used for making brushes and also for upholstering furniture.

5.22 Systematic collection and full utilization of these by-products is, however, not yet practised in all places in the country. There are considerable potentialities of fully exploiting these resources.



CHAPTER VI

Export trade in casings

6.1. In the beginning of the twentieth century there was a lucrative trade in export of animal casings to U.S.A., Canada, U.K., Switzerland, Portugal, Holland, Austria, Finland, Denmark and other countries. Some time in 1927 the U.S.A. placed an embargo on the importation of animal casings from India, as the arrangements for ante- and post-mortem inspection in slaughter-houses in this country did not come up to the requirements of the regulations framed in that country (Appendix I). Later, in 1938, the U.K. also prohibited the import of casings from India, as their Public Health Regulations (Imported Food) framed in 1937 required that all such imports should be accompanied by an official certificate from the country of origin. As the U.K. was the main importer of casings and the prices obtained there were favourable, it was felt that there was risk of this trade going to other countries. The then Government of India explored the possibility of making arrangements in some of the erstwhile provinces for proper inspection of slaughter-houses and certification of the casings meant for export.

6.2. The Government of Sind satisfied and Ministries of Food and Health in U.K. as regards the standards of ante- and post-mortem examination existing in that province, and the Government of U.K. accepted the certificate issued by the Director of Veterinary Services, Sind, in this respect. After partition, Pakistan continued to export casings through Karachi, but exports from India are not yet acceptable to U.K.

6.3 Hitherto, exact figures were not available for the total quantities of beef and sheep casings exported annually, as animal casings were not shown separately from other animal products in the export statistics. On the recommendation of the Animal Husbandry Wing Meeting at Poona (1953), the Director General of Commercial Intelligence and Statistics started to publish the export figures of animal casings as a separate item from 1955. There is an appreciable trade in this product with certain European countries, such as Switzerland, Denmark, Germany, Sweden, Spain etc., which have not imposed any stringent restrictions. The export figures of animal casings for the year 1955-56 and 1956-57 are shown below :—

Year	Quantity	Value
1955-56	4,022 cwt.	Rs 4,301,993
1956-57	4,562 cwt.	Rs 4,592,840

6.4. Health certificates for export of animal casings to European countries are issued by Principals of Veterinary Colleges in Bombay, Calcutta and Madras, and certificates of origin are signed by the Secretary of the Bombay Chamber of Commerce. Specimen copies of these certificates are included in Appendix II. At times, certificates issued by veterinary surgeons and others not specifically authorised by Government have also been accepted by some importing countries. Health

certificates issued in India are, however, not acceptable to U.K., U.S.A. and Canada. The main features of regulations of U.K. and U.S.A. are given below, and the requirements of Canada and similar. The restrictions imposed by these countries emanate from their eagerness to ensure not only that all animal products meant for human consumption have passed fairly rigid ante- and post-mortem examinations so as to avoid danger to public health but also that no contagious disease of animals not present in those countries is introduced through such imports.

U.K. HEALTH REGULATIONS.

6.5 The difficulties experienced by exporters to U.K. came to the notice of the Government of India, who took up the matter with the Government of the U.K. through the Indian Trade Commissioner in that country. The Trade Commissioner forwarded to the Government of India rules and regulations in force in U.K., to which the certificates issued by the exporting countries should conform. Relevant extracts from these rules are included in Appendix I. It is observed that the U.K. Government insisted that, before the health certificates issued by an exporting country in respect of these products are accepted by them, the following conditions must be fulfilled.

- (1) The meat and meat products to which the certificate relates have been derived after proper ante- and post-mortem examinations.
- (2) The meat has been dressed, prepared and packed with all precautions for the prevention of danger to public health.
- (3) It is ensured that no mixing of the inspected and uninspected product takes place before despatch.
- (4) Facilities for inspection of arrangements of certification are provided to the U.K. Ministry officers.

6.6 From the conditions prevalent in the majority of slaughter-houses in India it was apparent that it would not be possible to meet the requirements of the U.K. Government since proper facilities for ante-, and post-mortem examination did not exist, except possibly in a few places. From a recent survey carried out on the marketing of meat in India by the Directorate of Marketing and Inspection, Ministry of Food and Agriculture, it was observed that some facilities were available only in big cities like Bombay, Poona, Ahemdabad, Hyderabad, Agra, Lucknow, Delhi, Simla and Calcutta. In order to find out how far the rules and regulations in force in India could be made to conform to the requirements of the food import regulations in force in U.K., copies of the rule etc. received from U.K. were circulated by the Government of India to all the States for examination and comments. It was observed that, with the possible exception of the States of Madras, Hyderabad, Uttar Pradesh and Bhopal, which claimed that they were in a position, or could arrange, to meet the requirements of U.K. rules, the position in the country at large was not satisfactory and the standards of meat hygiene and the measures adopted with regard to packing were not likely to come up to the standard prescribed by the U.K. Government and other foreign countries.

EXPORT OF CASINGS TO U.S.A.

6.7 Certificates were also required for the export of casings to U.S.A., which could not be issued under the existing conditions. Uncertified casings could be exported to that country, but as required by regulations these had to be kept under the Customs custody at the U.S. ports till they were disinfected or denatured under the supervision of officers of the U.S. Bureau of Animal Industry. Even this arrangement was found to be uneconomical for the following reasons :—

- (1) The process of disinfection of uncertified casings on arrival in the importing country, to make them fit for human consumption, is expensive and cuts down the exporter's margin of profits considerably.
- (2) The disinfection departments of the importing country examine the goods at their convenience, which precludes favourable market conditions being availed of by the traders.
- (3) Process of disinfection destroys the look of the goods and weakens their texture, thereby reducing their life and their value.
- (4) Denaturing makes the casings unsuitable for human consumption.

6.8 The position in respect of export of animal casings was examined by the Animal Husbandry Wing of the Board of Agriculture and Animal Husbandry in India at its meeting held at Poona in March, 1953, and it was generally concluded that it would not be possible to enforce compulsory ante- and post-mortem examinations as required under the import regulations of U.K., U.S.A. etc. in all the slaughter houses in India, and that it would take a long time to fulfil these conditions. Consequently, the Wing made the following recommendations :—

(1) The Government of India may take steps to explore the possibilities as regards U.K. and U.S.A. agreeing to allow import of Indian un-certified casings for human consumption, if these are disinfected under the supervision of the Government of India according to the methods adopted in U.S.A. and certified accordingly

(2) If U.S.A. and U.K. agree to (1), then steps may be taken to license packers of animal casings for export.

(3) The Government of India may further explore the possibilities as regards the importing countries, i.e. U.K. and U.S.A. agreeing to accept produce from big slaughter-houses where ante- and post-mortem examination is carried out by veterinarians according to the standards acceptable to U.K. and U.S.A. If this is accepted, then separate accommodation and facilities should be provided in such slaughter-houses for processing and packing of the produce in a hygienic way and certified accordingly by officers appointed for the purpose.

(4) Replies received from the Governments of Madras, Hyderabad and Bhopal States indicate that arrangements exist in these States to conform to ante- and post-mortem standards required by the U.K. and

U.S.A Governments. Steps may be taken to examine the existing standards of meat inspection prevailing in these States by an *ad hoc* Committee to be appointed for the purpose by the Ministry of Food and Agriculture.

(5) The Director General of Commercial Intelligence and Statistics in India may be requested to consider the desirability of showing the export of animal casings as a separate item in the Sea-borne Trade Account.

6.9 Animal casings are used chiefly for two purposes, viz. (i) manufacture of sausages and (ii) industrial uses. Only certain types of casings are suitable for the manufacture of sausages, and these fetch much better prices than the guts utilized for industrial purposes. Casings unaccompanied by the certificates required by the importing countries are generally not used for human consumption and are disinfected and denatured to ensure their safe handling even for industrial utilization. This causes a great reduction in their value and in the returns to the exporters. The exporters of animal casings in India are, therefore, anxious that necessary condition should be created in this country to enable them to export casings and guts that may be acceptable to all the importing countries, including U.S.A. and U.K. and they have repeatedly requested the Government of India accordingly. They are particularly anxious to build up this trade with U.K. and U.S.A. because these two countries consume large quantities of animal casings, the bulk of which are now being imported from South America, Australia and certain European and Asiatic countries.

6.10 The Committee visited the slaughter-houses in Madras, Hyderabad, Uttar Pradesh and Bhopal, about which the respective State Governments had indicated that necessary conditions existed, or could be created without difficulty, for meeting the requirements of U.S.A. and U.K. in respect of ante- and post-mortem examination. The Committee also visited the slaughter-houses in some of the larger towns like Calcutta, Bombay, Bangalore, Delhi and Lucknow in order to see the existing conditions and to assess the ability of these slaughter-houses to meet the requirements of U.K. and U.S.A. In the opinion of the Committee, generally speaking, the conditions under which meat is produced in India are far from satisfactory and would have to be completely revolutionised before we can hope to attain a standard anywhere near those set by countries like U.K., U.S.A., and Canada. It follows, therefore, that there is no likelihood in the near future of our animal products being accepted by those countries. There are, however, one or two slaughter-houses e.g. perambur slaughter-house in Madras and the Military Butcheries in Poona, Bangalore and other cantonments, where it should be possible to raise the standards of meat production and inspection to a satisfactory level with only minor additions and alterations in the slaughter-house buildings and staff. Meat and meat products from such slaughter-houses should then be acceptable to the importing countries. The existing slaughter-houses in other large towns, where large quantities of casings are available, will have to be completely scrapped and rebuilt on modern lines, providing for efficient ante- and post-mortem examination and suitable facilities for the collection, cleaning and handling of the intestines.

6.11 Similarly, the conditions obtaining in the casings-processing factories cannot also be said to be generally hygienic. In the few factories visited by the Committee, conditions varied from place to place. There is no municipal or Government control over the processing and packing of casings and each factory follows its own conventional methods. There is also no system of inspection of premises by Government or municipal officials to ensure cleanliness and sanitation. In the absence of suitable arrangements in this regard, therefore, it would not be possible to issue the required official certificate.

INDUSTRIAL USES OF GUTS

6.12 A large proportion of animal intestines is utilized for the manufacture of guts or strings for sports goods, musical instruments, and a variety of other uses, including surgical guts. The preparation of surgical gut is said to be solely in the hands of one foreign firm, which does all the processing in India and exports the finished product to Switzerland merely for sterilization, grading and price fixation. The final product is used as cat-gut in many countries, and India has to depend for its requirements of surgical cat-gut on imports from abroad. This means a considerable economic loss to India in terms of costly cat-gut. The Committee felt that the Government of India should assist the Indian gut manufacturers by providing the necessary facilities and the technical know-how whereby it may be possible to undertake within the country complete processing of these guts, including sterilization and grading. It would also be advisable to acquaint the gut manufacturers with the latest techniques for the efficient and economical preparation, handling, storage and utilization of guts for various industrial purposes, and also to conduct researches for exploring new avenues of utility.



CHAPTER VII

Utilization of Animal Glands and Organs

7.1 Aspects of the utilization of animal glands, organs, etc. for the preparation of pharmaceutical products and allied purposes have been generally dealt with in Chapter V. The more important preparations that can be manufactured from glands and organs are mentioned below.

1. Liver	liver extract (oral and injectable); hydrolysates.
2. Pancreas	insulin; pancreatic enzymes.
3. Pituitary	anterior lobe hormone; posterior lobe hormone; ACTH; prolactin etc.
4. Thyroid	thyroxine; thyroid powder.
5. Adrenals	adrenalin.
6. Lungs	heparin.
7. Thymus	desoxyribonucleic acid.
8. Calf stomach	rennet; pepsin.
9. Pig stomach	gastric mucin; intrinsic factor.
10. Spinal cord	cholesterol, which is the starting point for the manufacture of many valuable products like androsterone, testosterone, vitamin D ₃ etc.
11. Blood	blood substitutes (haemoglobin); peptone; protein, agglutinates; hydrolysed fibrin, blood serum; blood plasma.
12. Bile	bile salts (cholic acid) for preparing desoxycorticosterone and other steroids.

7.2 Besides the preparation mentioned above there are many others which can be produced from animal glands, organs and tissues and utilized for a variety of chemical processes involved in the manufacture of pharmaceuticals and other industrial products.

REQUIREMENTS

7.3 At present almost all these products are being imported from abroad in varying quantities, entailing fairly heavy drainage on foreign exchange. In Appendix XI some information is given concerning the quantities and value of the glandular preparations that are at present being annually imported from foreign countries. The estimated capacities for production, as judged by the team of Russian experts that visited India some time ago to survey the scope for the development of the pharmaceutical industry in India, are also given in Appendix IX. It is often said that, if the glands and organs of even half the number of animals slaughtered in the various urban slaughter-houses all over the country were collected and utilized, India should become more than self-sufficient in its requirements of glandular preparation.

7.4 The only product which is now being regularly prepared by a number of pharmaceutical concerns in India is the liver extract. This

is being marketed chiefly in two forms, i.e. for oral use and for injection. Even in this case India has not yet become fully self-sufficient, and certain small quantities are still being imported from abroad.

COLLECTION

7.5 As already indicated, proper facilities for the collection of glands from slaughtered animals are lacking in our slaughter-houses. Moreover, the quantity collected represents only a small fraction of the total available. As every part of the carcase, except blood, is regarded as the property of the butchers they have to be often persuaded to part with the glands and organs required for pharmaceutical purposes, and the post slaughter practices adopted by the butchers are not such as would facilitate proper collection of the required material.

QUALITY

7.6 Generally speaking, the quality of glands etc. available in slaughter-houses in India is not inferior to that available elsewhere. This is borne out by certain preliminary investigations that have been conducted on liver extract by certain pharmaceutical firms. Nevertheless, especially in recent years, owing to the ban on cattle slaughter in majority of the States and the restrictions imposed in other States, the number of large animals slaughtered in the country has considerably decreased, and usually very old cattle not in robust health are permitted to be slaughtered. There has been some suspicion that the quality of the glandular products from such animals may not be as good as that of products obtained from perfectly healthy and comparatively young animals. Attempts have been made to utilize the glands and organs of sheep and goats in spite of their small size, and the results obtained appear to have been encouraging.

7.7 Proper arrangements for ante- and post-mortem examination are of the utmost importance in all slaughter-houses to ensure collection of healthy glands and organs. They should also be collected and handled with hygienic precautions in clean container and not thrown about on dirty floors. The nature of almost all the glands required for pharmaceutical purposes is such that they must be collected as quickly after slaughter as possible; otherwise their active principles deteriorate very rapidly on account of the autolytic processes which set in quickly in such glands. In the case of pituitary and certain other glands most of the active principles are destroyed if the glands are not removed from the carcase within half-an-hour after slaughter. It is here that the cooperation of the butchers is needed most, for under the present system of slaughtering, flaying and dressing a long time is allowed to elapse before it becomes possible to collect any glands or organs. A suitable system will have to be devised for speedy collection, and it may even be necessary for the municipalities to enforce this and to appoint special staff for the purpose.

STORAGE AND TRANSPORT

7.8 Immediately after collection, the glands have to be suitably preserved till they can be processed in the pharmaceutical laboratory. This usually means an interval of several hours or even one day. Liver

can be satisfactorily preserved at ordinary cold-storage temperatures (0 to 50°C), but other glands, like the pituitary, have to be stored under deep-freeze conditions (-15 to -20°C). It would be advisable for the municipalities to provide this facility in most of the larger slaughter-houses. Deep-freezing cabinets and quick-freezing chambers may be set up in the slaughter-houses either by the municipalities or by the pharmaceutical concerns themselves. The Committee noted with regret that so far the pharmaceutical concerns in India had themselves taken no active steps to ensure proper storage of glands etc. required by them, or even to supervise their proper collection. It would also be desirable to provide refrigerated rail motor transport wherever indicated.

PRICE

7.9 There is no satisfactory system followed at present for fixing the prices of the different glands and organs, with the result that the prices fluctuate from time to time. It would be desirable, in the interests of the butchers as well as the pharmaceutical concerns, to have the prices etc. settled periodically by special boards consisting of representatives of the municipality, the pharmaceutical concerns, and the State Government. These boards may also decide all other matters pertaining to the collection etc. of various slaughter-house products.

7.10 The only organ which is at present being utilized more or less regularly in certain large towns is the liver. Occasionally, certain other glands, organs, and materials like bile and blood are collected on a small scale and used for experimental and other purposes. The Committee visited a number of pharmaceutical firms engaged in the preparation of liver extract and saw the conditions under which the liver was being collected in the slaughter-houses, the quality of the livers collected, their handling in the slaughter-houses, arrangements for transport, storage in the pharmaceutical laboratory, and subsequent processing. The Committee felt that there was scope for improvement practically at every stage up to the time of the pharmaceutical processing.

ECONOMICS

7.11 The question of utilization of liver and other glands and organs for the preparation of glandular products has been examined by a number of other committees and experts. Opinion on the desirability of taking up large-scale manufacture of glandular products in India, other than liver extract, appears to be divided. One school of experts maintains that, since most of these products can now be synthesised and need not be prepared from animal material, it could not be advisable to embark upon the comparatively costly venture of preparing them from animal glands and organs. Even in the case of products derived from the pituitary and the pancreas they maintain that economical utilization of these glands would be possible only if they become available in much larger quantities than at present. For example, it is said that the smallest commercial unit for economical manufacture of insulin would require about 1000 kg. of pancreas daily. The other school of experts maintains that, even in the case of those glandular products which are now being synthesised comparatively cheaply, many practitioners prefer to prescribe animal gland preparations, e.g. thyroid power. Moreover, they maintain that the utilization of animal glands for preparing these products

should not be ruled out merely on account of the costs involved, for they feel that until these glandular products are synthetically manufactured within the country on a larger scale every effort must be made to make the country self-sufficient by preparing them from animal glands and organs, so that the drain on foreign exchange resulting from the imports may be relieved and the country protected against any difficulties arising out of war. This Committee is inclined to accept the latter view. For example, in 1955, 264.8 mega units of insulin valued at Rs. 18,66,646 were imported into India. The demand for insulin and other hormones is likely to increase from year to year with the rise in the purchasing capacity of the public and the increasing consciousness for human health. As a matter of fact, a number of pharmaceutical concerns are eagerly planning the manufacture of insulin, adrenalin, testosterone etc., and they have been urging the desirability of early improvement of slaughter-house conditions and provision of the requisite facilities.

7.12 The question of economical production of glandular preparations is no doubt of very great importance. The two major factors that govern this aspect are the price of the raw material and its availability in adequate quantities to permit manufacture on economical basis. The quantities generally available from individual slaughter-houses in the case of smaller glands like the pituitary are not such as would permit economical production. In order to increase the source material substantially, it would be desirable to centralise all slaughter in large towns and to provide necessary facilities of storage etc. whereby the supplies of a number of days may be pooled into sufficiently large collections. The pituitary, for instance, can be satisfactorily preserved under deep-freeze conditions and in acetone in hermetically sealed containers. Modern refrigeration advancements have made it possible to preserve and pool for economical handling supplies of several days and from a number of slaughter-houses located in different and distant places. Thus, frozen liver and pancreas from Australia, New Zealand, U.S.A. and other parts of the world are being shipped in large quantities to Europe for preparation of pharmaceutical products.

RESEARCH

7.13 Preliminary investigations conducted at the Indian Institute of Science, Bangalore, and in some of the pharmaceutical laboratories have given results which tend to show that a large variety of slaughter-house by-products, including glands, and organs, can be satisfactorily utilized for several industrial and pharmaceutical purposes and that the quality of the final products compares well with that of the imported products. There is, however, considerable need for further research in the subject in order to develop most efficient and economical methods of collection, handling and utilization of these materials. The Committee agrees with the recommendations made by certain other expert bodies that, to begin with, at least one well-equipped research unit for the purpose may be established in India. It is further suggested that research institutes, such as the Haffkine Institute, Bombay, the Indian Institute, of Science, Bangalore, the Central Drugs Research Institute, Lucknow, and the Indian Veterinary Research Institute, Izatnagar may also conduct researches on utilization of slaughter-house products for pharmaceutical purposes.

CHAPTER VIII

Export Trade in Meat

8.1 Meat is a highly perishable commodity. As such, its export requires adequate facilities for preservation. In India there are a few factories processing piggery products. The processing presently is largely confined to frozen meat, though small quantities of canned products are also produced. Unprocessed meat is also taken in small quantities by ships touching our ports.

8.2 During the war meat-dehydration factories were set up. In the years 1944 to 1946, 1.3 million goats were slaughtered and about 2,000 tons of dehydrated meat was manufactured. The product was entirely meant for the defence services. After the end of the war there was no demand for this product, and the factories were closed down. Before the war small quantities of dried buffalo meat, called Biltong, used to be exported to Burma. This trade also does not exist now.

8.3 India, with its large livestock population, can build up a sizable export trade in meat and meat products. The evidence recorded from the few exporters has shown that there is great demand for frozen buffalo meat and piggery products in the South East Asian countries. In the recent past there have been exports of small quantities of frozen meat, smoked meat, and sausages of Hong Kong and other ports in the Far East. There have been some enquiries for the export of meat even from the continental countries of Europe, but nothing materialised due to restrictions placed by those countries.

8.4 At present there are very few firms engaged in the processing of meat, and efforts for promoting the export trade have been sporadic; but there is clear evidence that with proper handling and after acceptance of our products in importing countries the trade can be expanded to a very great extent. This will bring in valuable foreign exchange and improve the economic condition of the producers of livestock.

RESTRICTIONS BY IMPORTING COUNTRIES

8.5 As in the case of animal casings, veterinary health certificates issued by the authorities in India in respect of meat are not acceptable to the major importing countries, the main reason for this being the prevalence in India of contagious animal diseases and inadequate ante- and post-mortem examinations. Almost all the importing countries have framed regulations, which require a certificate to the effect that the product has been manufactured out of the healthy animals drawn from disease-free areas. Efforts made so far through our embassies have failed to obtain acceptance of certificates issued by veterinary authorities in the States concerned in India. The trade has constantly demanded facilities for export. Certain firms are prepared to employ qualified veterinarians for conducting ante- and post-mortem examinations, in case the employment of such staff would enable them to export their products. So far very little effort has been made to promote export trade in meat,

and definite measures will have to be taken to satisfy the requirements of importing countries. This can be achieved only if the Government of India assumes the responsibility of certifying all meat and meat products for export, as is being done by the Federal Government of the United States of America. At present there is no Government control to test the quality of meat and efficiency of methods of processing and packing employed by such firms.

PROCESSING OF MEAT FOR EXPORT

8.6. At present there are very few firms which have facilities for processing of meat for export. These firms are engaged in the manufacture of big products and undertake the canning of small quantities of sausages and other products both for internal consumption and export. The Committee visited three such factories situated in Calcutta, Delhi and Aligarh, the last one being a Government concern. During the war, as many as 100 pigs per day were slaughtered in the Calcutta factory. The equipment and the facilities are even now available with the firm for handling this number of animals. The factory at Delhi has facilities for handling about 50 pigs per day. The factory at Aligarh, which is attached to the Government Central Dairy Farm, can handle about 100 pigs per day with the equipment available there. None of these factories is working to full capacity because of negligible demand within the country and lack of opening for export due to restrictions placed by importing countries. The factories at Calcutta and Aligarh are equipped with cold storage facilities and can handle over 100 pig carcasses for the production of frozen pork. These firms have acquired considerable experience and have facilities for expanding their capacity and increasing their output, provided satisfactory conditions for the export of their products could be created.



सत्यमेव जयते

CHAPTER IX

Control and Improvement of Meat Inspection

9.1 Production and marketing of meat is regulated by local bodies under Municipal Acts, whereby municipalities are empowered to frame by-laws for the regulation and inspection of slaughter-houses. Licences for private slaughter-houses as well as for butchers are also granted under these powers.

9.2 There is no comprehensive legislation regulating the production and inspection of meat on an all-India basis. The position, therefore, with regard to meat inspection is that, while the local bodies derive their powers from their respective Acts and frame by-laws thereunder, the execution of these remains their own responsibility. The Government of India, acts only in an advisory capacity and has no control to ensure proper meat inspection throughout the country. The State Government, from time to time, excise certain powers in the regulation of slaughter-houses through the local administration departments. Model by-laws, and such other directives in respect of food hygiene etc. as are considered necessary, are also circulated by them to the municipalities for adoption. The responsibility of running the slaughter-houses and regulating the inspection of meat is, however, vested in the municipalities, and the by-laws are generally administered and enforced by the Medical Officers of Health, assisted by Sanitary Inspectors and part-time or whole-time Veterinary Surgeons.

9.3 A set of model by-laws was circulated by the Indian Council of Agricultural Research of the State Governments some years ago. Some States have included in their municipal by-laws the procedures recommended by the Indian Council of Agricultural Research for inspection of animals before and after slaughter. The by-laws in force in some of the States are not detailed and comprehensive, but have sufficient provision whereby proper inspection could be insisted upon. From the examination of witnesses and during inspection of slaughter-houses, it was observed by the Committee that various provisions made in the by-laws were not enforced in practice. The Masani Committee in its report has also recorded as follows:—

“The evidence received by us is overwhelmingly in favour of special legislation. We accept this view that there should be legislation specially regarding location and construction of slaughter-houses and that some suitable model rules should be framed in the management of slaughter-houses. We have already recommended separately special legislation making it obligatory on the part of local bodies to institute proper meat inspection at the slaughter-houses.”

9.4. The present set-up is not considered adequate and effective to enforce proper inspection and control of the meat Industry. The Medical Officers of Health, on whom lies the overall responsibility of inspection of slaughter-houses and meat, have multifarious duties to

perform and are unable to devote sufficient time to this subject. The Sanitary Inspectors also have many other duties to perform, apart from the fact that their training is generally inadequate for carrying out proper meat inspection. Similar observation was made by the Health Survey and Development Committee, as quoted by Thornton: "The duties of the sanitary inspector are heavy and his professional training not adequate to meet the requirements of some of his highly technical duties and he spends the larger part of his time in writing reports instead of concentrating on outside work." It is therefore, obvious that there is definitely a need for a separate Meat Inspection Service solely for ensuring efficient working of slaughter houses and proper meat inspection.

9.5 The Committee also examined the question of administration of slaughter-houses, especially with the object of ensuring efficient meat inspection in view, and was convinced that it would not be possible to effect substantial improvement in meat inspection practices unless the officials responsible for this work had long experience of meat production and meat hygiene and were vested with adequate executive powers. As already stated, under the existing arrangements the executive powers rest with the medical officers of health, who do not actually perform the duties of meat inspection. Further, in most cases the staff appointed for carrying out ante-and post-mortem examination is inadequate, and in many places a single veterinary officer is called upon to attend, even during the same working hours, more than one slaughter-house, often situated far apart.

9.6 With regard to the personnel who should be entrusted with the duties of meat inspection, the Masani Committee has stated that "the question for consideration is that of the agency which should carry out meat inspection. Obviously, the Veterinarian by virtue of his training is the fittest person to do this job." Thornton has made a similar observation, which is as follows:—

"Inasmuch as the basic training of veterinarian in matters concerned with meat and milk hygiene is more comprehensive than that of any other officer concerned with public health, it is logical to recommend that the ante-and post-mortem inspection of all animals be carried out exclusively by veterinarians, and these officers should be employed on a whole-time-basis by the larger cities, while these duties in smaller towns could be performed on a part-time basis by members of the Civil Veterinary Department."

This Committee is in entire agreement with the views expressed by the Masani Committee and by Dr. Thornton, and fully endorses their recommendations. As a matter of fact, the food regulations of the countries importing meat and meat products require that ante-and post-mortem examinations should be done by veterinarians. In the past, shortage of veterinarians and unattractive emoluments offered by the municipalities have probably been two major reasons for meat inspection work being entrusted to 'lay' inspectors. Veterinarians have now started becoming available in larger numbers, and municipalities should agree to

offer reasonable emoluments to attract men of the requisite training and experience.

9.7. Production and inspection of meat covers all aspects of animal slaughter from the procurement of livestock to the sale of meat for human consumption and the utilization of slaughter-house by-products. The role of veterinarians in the production of meat in particular and in the maintenance of public health in general has been appreciated in all the advanced countries and independent Veterinary Public Health Services have been organised in many such countries. It has been generally recognised that the veterinarian is the person best qualified by his training to judge the fitness or otherwise of all food derived from animals. In these countries the items included under food which require veterinary inspection are meat, fish, poultry, eggs, milk and milk products, such as cream, butter and cheese. Besides, there are many diseases ('zoonoses') which are communicable from livestock to man through other means. The Committee considers that in this country also early steps should be taken for the establishment of Veterinary Public Health Services both at the Centre and in the States. This Veterinary Public Health Services should include the Meat Inspection Services recommended above. The sanitary inspectors at present employed in the slaughter-houses should be absorbed in this Service, and arrangements should be made to suitably train them further for efficient discharge of their duties. All such personnel engaged in meat inspection work should be designated as 'Meat Inspector', and they should not be entrusted with other duties to the detriment of their legitimate work. The following observation made in the FAO/WHO publication 'Meat Hygiene' would be of interest in this connection :—

"In many countries the division of responsibility for meat-hygiene supervision among government departments is not clear-cut. Although no standard or uniform pattern exists, it is readily apparent that the effective operation of a meat-hygiene service must be based on close working relationships between the triad of medical, veterinary, and sanitary-engineering disciplines. Since meat hygiene is essentially a public-health function, and the veterinarian is usually best trained and equipped to deal with diseases transmissible through meat, some health authorities have found it advantageous to include a veterinary public-health branch in their services, to cover meat-hygiene needs as well as other responsibilities such as zoonoses. A closer co-ordination of the activities and interests of groups concerned with meat hygiene has thus been achieved."

9.8. There is at present no central agency specifically charged with the function of developing and improving the conditions and standards of slaughter-houses and meat inspection practices and the various ancillary trades and industries throughout the country. Absence of such a co-ordinating agency for advising the States and local bodies in these matters perhaps has been largely responsible for the low standards obtaining in the country and for the lack of uniformity in practices. The Committee fully endorses the recommendations made in the report on the Marketing of Meat in India regarding the improvement of slaughter-houses, meat inspection standards, and other allied matters and strongly recommends early action towards setting up of a central slaughter-house committee,

as it is convinced that no substantial progress in standards in the country would be possible unless such a committee is set up. This is all the more urgent in view of the fact that in many larger cities there are under consideration proposals for shifting the present slaughter-houses to suitable outskirts. The proposed committee should be set up in the Ministry of Food and Agriculture to assist the Government in the preparation and implementation of plans for the development of meat industry. It may be styled as the Central Committee for development of Meat Industry and should be on a permanent basis to maintain the continuity and progress of work throughout the country. It is further recommended that the proposed committee should include *inter alia* representatives from the following interests :—

- (1) One or more representatives from the Union Ministry of Food and Agriculture.
- (2) One representative of the Directorate of Marketing and Inspection, Government of India.
- (3) One representative of the Union Ministry of Health.
- (4) One representative of the Union Ministry of Commerce and Industry.
- (5) One Engineer conversant with the designing and construction of slaughter-houses.
- (6) One Veterinarian from a major municipal corporation.
- (7) One representative of the pharmaceutical industry.
- (8) One representative of the meat Industry.
- (9) One member conversant with the hides and skins trade.

This committee should have a whole-time technical secretary of reasonably high status, assisted by such technical and other staff as may be required.

99. As stated in chapter III, the present condition of most of the slaughter-houses in the country is such that they urgently need either to be shifted to new sites or to be considerably expanded and structurally improved on the existing sites. This would naturally entail much capital expenditure on the local bodies. It has already been recommended that the local bodies concerned should earmark a greater proportion of the income derived from slaughter-houses for their maintenance and improvement. It is further considered desirable that the Government of India as well as the State Governments should help the local bodies by rendering them suitable financial assistance for meeting the initial capital expenditure required for constructing new slaughter-houses or for improving those not considered necessary to be shifted. The Committee was informed that certain State Government, notably U.P. and Bombay, have already set apart certain funds for this purpose but not many local bodies have yet taken advantage of the aid offered. It would, therefore, be desirable for the Government of India and the States Governments to take necessary

steps to persuade the local bodies appreciate the importance and urgency of improving their slaughter-houses and ensuring satisfactory meat inspection practices.

9.10. The technical resources of the country are also limited. There are not many persons fully conversant with the construction and management of modern slaughter-houses. In view of this it is desirable that a nucleus set-up be created at the Centre which may act as a guiding agency for various projects to be undertaken in the country. This work may be entrusted to the Ministry of Food and Agriculture, which is normally concerned with all matters pertaining to livestock. The Committee feels that it would be advisable for the Government of India to send a small team to study the organisations and working of the slaughter-houses and the allied industries in U.S.A. and more advanced European countries. It would also be desirable to obtain the services of one or more experts in these particular trades under the foreign-aid programmes. Simultaneously, selected officers should be deputed abroad for specialized training in slaughter-house management and meat inspection practices.



SUMMARY AND RECOMMENDATIONS

CHAPTER I

Introduction

1.1., 1.2. Livestock and livestock products contribute several thousand crores of rupees annually to the Indian economy. Meat and various slaughter-house by-products provide vast potentialities of economic utilization within the country and offer great scope for developing the export trade.

1.3., 1.4. Of particular value in this regard are the hides and skins, glands and organs, and casings. India occupies a unique position in the international market for sheep and goat skins, but their value is considerably depreciated by the defective methods of flaying employed. With the exception of liver extract, which is now being prepared within the country, no serious attempts have yet been made to harness the resources available for the manufacture of other glandular products. Animal casings are being exported in large quantities to various countries, but some of the biggest importing countries, such as U.K., U.S.A. and Canada, have imposed stringent restrictions which preclude imports of Indian casings mainly because our meat inspection practices do not come up to the required standards.

1.5. The position in respect of export of animal casings was examined by the Animal Husbandry Wing of the Board of Agriculture and Animal Husbandry in India at its 1953 meeting, which recommended *inter alia* that the Government of India might appoint an *ad hoc* Committee to examine the facilities and standards obtaining especially in the States of Madras, Hyderabad, U.P. and Bhopal, which had claimed that they had or could easily make adequate provisions for satisfying the standards prescribed by U.K. and U.S.A.

1.6., 1.7. Matters relating to utilization of animal glands and organs for pharmaceutical purposes were considered by the Pharmaceutical Enquiry Committee, which recommended that modern slaughter-houses with facilities for proper collection and storage of glands and organs should be established in the first instance in big cities such as Bombay, Madras, Calcutta, Delhi.

1.8. Consequently, in 1955, the Government of India in the Ministry of Food and Agriculture appointed an *ad hoc* Committee to examine the existing slaughter-houses and meat inspection practices, particularly in Madras, U.P. Hyderabad and Bhopal, and to examine the questions of improving the existing conditions and facilities for proper utilization of glands and organs, including the establishment of model abattoirs, and to make recommendations accordingly.

CHAPTER II

Programme of Work

The Committee held several meetings; visited the slaughter-houses in Calcutta, Bombay, Poona, Ahmedabad, Madras, Bangalore, Hyderabad, Delhi, Bhopal, Lucknow, Bareilly and Moradabad; collected through comprehensive questionnaires information about slaughter-houses and meat inspection practices in all the States as well as about manufacture of glandular preparations etc. by several pharmaceutical concerns; visited a number of casings-processing factories; and interviewed a large number of officials, representatives of local bodies, representatives of various trades concerned with slaughter-houses, and others interested in these subjects. The Committee also examined certain reports and other publications of special committees, Government Departments and experts, wherein one or more of the subjects covered by the terms of reference have been dealt with.



CHAPTER III

Slaughter-houses

3.1. There are innumerable slaughter-houses in India, of which scarcely 10 per cent or so are licensed.

3.2. In almost all towns, there are separate slaughter-houses for cattle and buffaloes, for sheep and goats, and for pigs, and also for slaughter by the *halal* method and the *jhalka* method.

3.3. Urban slaughter-houses are owned by municipalities and local boards, which also provide certain essential services. Butchers and flayers are usually not municipal employees and are not everywhere licensed.

3.4. Entry to slaughter-houses is not always strictly regulated, and unauthorised persons, children, and creatures like dogs, vultures etc. walk in unchecked.

3.5. Slaughter-houses are very good sources of revenue to municipalities and local boards, but the expenditure on their up-keep and improvement is grossly incommensurate with the income derived from them.

3.6. The main source of income from slaughter-houses are the fees charged for all animals slaughtered there. These vary from town to town, being unreasonably low in many places.

3.7. Most urban slaughter-houses were constructed some 30 to 50 or more years ago, those at Tangra in Calcutta and Bandra in Bombay being over 90 years old. Though originally located well outside the towns, today most of these have come within or close to inhabited areas and need to be shifted to new sites.

3.8. The number of animals handled in almost all slaughter-houses today far exceeds the number for which they were originally designed.

3.9. The general construction of slaughter-houses, with few exceptions, is wanting in proper sanitation, ventilation, drainage, protection against rain, flies and crows, and in necessary facilities for proper ante- and post-mortem examination. In many cases, even ordinary repairs are not attended to.

3.10. Slaughtering hooks, hoisting arrangements, gut-washing tanks etc. are generally non-existent or inadequate.

3.11. Supply of running water is often inadequate.

3.12. Lighting arrangements are generally poor.

3.13. Separate compartments for bleeding and channels for collecting are generally wanting.

3.14. Lairage arrangements are usually inadequate and defective, and very often the animals waiting there can see the operations going on in the main slaughter hall.

The Committee recommends that—

1. All urban slaughter-houses as well as the butchers and flayers working there should be licensed, and entry to slaughter-houses should be strictly regulated.

2. Greater proportion of the income derived from slaughter-houses should be spent on their upkeep, efficient running and improvement.

3. Slaughtering fees, where these are low, should be suitably enhanced as far as possible.

4. For accommodating animals awaiting slaughter, every slaughter-house should have a properly constructed lairage, and this should afford protection against sun and rain, allow ample supply of drinking water and provide sufficient accommodation as well as satisfactory arrangements for securing and handling animals for facilitating quick but careful ante-mortem examination of individual animals.

5. The general construction and orientation of the lairage, slaughter hall etc. should be such that the animals awaiting slaughter are not able to see the slaughtering and other operations.

6. All such urban slaughter houses as have now fallen within or very close to inhabited areas should be closed down and new* slaughter-houses, designed on modern lines and well provided with requisite arrangements and facilities for efficiently conducting the slaughtering, flaying, dressing and all other operations, should be set up well away from inhabited areas. In selecting the new sites, future expansion of the towns should be taken into consideration, and adequate space should be provided for future development of the slaughter-house and for locating around it the various ancillary trades.

7. In the meantime, all necessary structural alterations and other improvements should be made in the existing slaughter-houses to facilitate slaughter and the various operations before and after slaughter.

8. In slaughter-houses handling much large numbers than they were designed for arrangements should be made for slaughter in suitably regulated shifts to relieve congestion and to facilitate operations and inspection.

* Particular attention to this recommendation should be paid by the local authorities in Bombay, Delhi and Bangalore who are already actively considering re-location of their slaughter-houses. Plans for modern slaughter-houses are available in the FAO/WHO publication "Meat Hygiene" (1957), in the First Report of the Joint FAO/WHO Expert Committee on Meat Hygiene (1955), and in standard texts on the subject. It is understood that a comprehensive publication on the construction and planning of slaughter houses is being prepared jointly by the FAO and WHO.

CHAPTER IV

Production and Inspection of Meat

4.1. Meat in India is derived mainly from goats and sheep, and to some extent from cattle, buffaloes and pigs.

4.2. The bulk of animal slaughter is in large cities and towns, and the animals come mainly from rural areas, being transported over varying distances either on foot or by rail, lorry etc. The transport arrangements are generally unsatisfactory, and most animals reach the slaughter-house in a run-down condition.

4.3. In many places the animals coming from outside are driven straight to the slaughter-house, and are often slaughtered without sufficient rest in the lairage.

4.4. Ante-mortem examination is an essential pre-slaughter requisite for ensuring that the animals are not affected with any disease or other condition which may render their flesh unwholesome.

4.5. This is either not done at all or is only perfunctory and rendered difficult by defective arrangements of lairage etc.

4.6. Rejection based on ante-mortem inspection are negligible and are seldom recorded, and on the whole any inspection etc. done before slaughter appears to be largely for the purpose of collecting fees.

4.7. The commonest method of slaughtering followed is the *halal* method of Mohammedan butchers.

4.8. The Sikh butchers practise the *jhatka* method.

4.9. The Jewish method (*shechita*) is practised in very few towns.

4.10. Pigs are slaughtered by piercing the heart through the base of the neck.

4.11. None of these methods is preceded by stunning.

4.12. Stunning before slaughter is highly desirable, but it would appear to be unacceptable in India, especially to Mohammedan butchers.

4.13. Most flaying and dressing operations are done on soiled floors or on uncovered platforms. Inflation by mouth is practised by many sheep and goat flayers.

4.14. Careful and systematic post-mortem examination is essential for detecting diseased carcases and organs etc. and demands good technical skill and adequate time, besides proper facilities. Many urban slaughter houses no doubt have whole-time or part-time veterinary officers or sanitary inspectors, but their number is far too inadequate for the purpose. Some urban slaughter-houses do not have a veterinary officer or even an experienced sanitary inspector.

4.15. Proper post-mortem examination also demands certain facilities, such as adequate space, tables, racks etc. and suitable arrangements for a systematic procedure. These facilities are generally lacking, and the degree of congestion in the slaughter-houses and the practices followed by the butchers preclude satisfactory examination. Records of condemned organs etc. are seldom maintained. Incinerators or rendering-down plants for destruction or utilization of condemned carcasses and organs are seldom provided in slaughter-houses.

4.16. Except in very few large cities, fly-proof vans are not available for transporting meat from the slaughter-house to the market.

4.17. With few exceptions, the conditions under which meat is sold to the consumer are unhygienic.

4.18. Cold storage facilities are non-existent in slaughter-houses and are a rare feature in Indian markets.

The Committee recommends that—

1. Better arrangements for the carriage of animals to slaughter-houses should be provided, and the railway wagons meant for animal transport should be so constructed that they do not become excessively hot during summer or unbearably cold during winter.

2. Livestock markets should be located as close to the slaughter-houses as possible.

3. All animals before slaughter should be rested for at least 12 hours in the lairage.

4. It should be made incumbent on all municipalities and local boards to engage adequate numbers of veterinary officers and to provide the requisite facilities for carrying out proper ante-mortem examination in all slaughter-houses, proper maintenance of records of all animals rejected on ante-mortem examination should be insisted upon.

5. Gimbals and hooks for hoisting carcasses must be provided in sufficient numbers in all slaughter-houses to facilitate flaying and dressing as well as post-mortem examination.

6. Post-mortem inspection by qualified veterinary officers should be made compulsory at all slaughter-houses and should be rigidly enforced by the State Governments, and for this purpose the municipalities and local boards must employ adequate veterinary staff to be determined by the number of animals slaughtered each day and provide all necessary facilities for conducting the examination.

7. Incinerators or rendering-down plants should be provided in all large slaughter-houses.

8. Maintenance of proper records of all condemned organs etc. should be insisted upon.

9. Municipalities should provide suitable cold-storage at slaughter-houses for storing dressed carcasses and glands and organs wherever required.

10. They should also ensure proper sanitary conditions for the transport and sale of meat and, at least in big cities, provide fly-proof motor transport and cold-storage facilities in the main meat markets or encourage private enterprise to do so.

CHAPTER V

Slaughter house By-products

5.1. Production of meat yields several edible and inedible by-products.

5.2. In more advanced countries, all parts of the animal carcase are utilized and considerable income is derived from the by-products.

5.3. In India, utilization of slaughter-house by-products has yet to be properly organized, though already much valuable foreign exchange is being earned through exports.

5.4. The intestines are useful for making guts and casings.

5.5. Intestines of cattle for processed and mainly exported for sausage-making.

5.6. Those of sheep and goats are used partly within the country for making guts for tennis rackets and musical instrument strings.

5.7. The number of persons who depend partly or wholly on the gut-making industry is large indeed.

5.8. Delay in washing and processing of intestines depreciates their value.

5.9. Several animal glands, organs and tissues represent valuable raw material for manufacturing a number of hormones and other pharmaceutical preparations, many of which are being imported from abroad.

5.10. Liver is practically the only organ which is being more or less regularly collected from some slaughter-houses for preparing liver extract.

5.11. There are no satisfactory arrangements for controlling the prices of glands and organs, which are the property of the butchers.

5.12. These glands have to be collected immediately after slaughter and to be preserved in cold-storage till they can be processed further.

5.13. Hides and skins are probably the most valuable by-products of the slaughter-houses.

5.14. Majority of the hides produced in India are of poor quality mainly owing to the primitive tools and defective methods used.

5.15. Few slaughter-houses have hide-curing yards attached to them.

5.16. Special courses of training in the art of flaying have been instituted in certain States, and these have proved extremely beneficial.

5.17. Damage by defective flaying depreciates the average value of hides by 20-25 per cent., and this means much national loss. An

important cause of careless flaying is the sale of hides before slaughter on a forward contract basis.

5.18. A buffalo hide is usually priced at Rs. 30-35 and a cattle hide at Rs. 15-20.

5.19. Slaughter-house blood is valuable for a variety of uses.

5.20. In many places no efforts are made to collect it separately while in others the methods of collection and disposal are defective.

5.21. The other by-products are fats, horns and hoofs, bone trimmings, wool, hair and bristles, which can be put to a variety of industrial uses.

5.22. There is great scope for systematic collection and utilization of various slaughter-house by-products.

The Committee recommends that—

1. Systematic collection, efficient preservation and processing, and full utilization of all slaughter-house by-products and wastes should be properly organised in all towns.

2. Gut-washing tanks and other facilities for timely washing and cleaning of the intestines should be provided in all slaughter-houses.

3. All slaughter-houses should provide and maintain in workable condition adequate hoisting arrangements to facilitate proper flaying and dressing, and the use of modern tools by flayers should be insisted upon. Curing salt and modern flaying tools should be made available for sale on slaughter-house premises. Flayers should also be fully trained and licensed, and rules for the examination of flayers, conditions of licence etc. should be framed on all-India basis. Sale of hides and skins should be on the basis of their quality—for which a reliable system of grading should be introduced—and sale by forward contract should be forbidden. Hide curing yards should be provided at or close to slaughter-houses.

4. Special bleeding rails and channels for collecting blood free from admixture with ingesta etc. should be provided in all urban slaughter-houses. It should be made obligatory on the authorities in-charge of urban slaughter-houses to ensure proper collection of blood and its processing for use as animal feed, manure etc., and in big cities also for pharmaceutical purposes.

CHAPTER VI

Export Trade in Casings

6.1. Export of animal casings from India has been a very lucrative trade ; but certain restrictions were imposed by U.K. and U.S.A. which required proper veterinary certificates to accompany all consignments. Before partition, the then Government of India asked the various Provinces to arrange for proper meat inspection and certification of casings.

6.2. The Government of Sind could satisfy the U.K. Ministries of Food and Health, and casings exported from Karachi became acceptable to U.K. Exports from the post-partition India however, have not yet become acceptable to U.K.

6.3. The export statistics for 1955-56 and 1956-57 show that casings of the value of 43 to 46 lakhs of rupees are still being exported to many foreign countries.

6.4. The certificates at present issued in India are being accepted in many countries, but not by U.K. and U.S.A.

6.5. The regulations prescribed by U.K. demand certificates of proper ante- and post-mortem examination and of sanitary precautions in dressing, processing and packing.

6.6. Enquiries made by the Government of India had indicated, that with possible exception of a few States, the standards of meat hygiene in the country generally were not likely to come up to the levels prescribed by U.K.

6.7. U.S.A. required similar certificates, which could not be issued. Uncertified casings could be exported to that country, but their examination at U.S. ports is often considerably delayed, and they are usually disinfected or denatured before they are finally accepted, thereby greatly reducing their value.

6.8. In 1953, the Animal Husbandry Wing of the Board of Agriculture and Animal Husbandry in India examined the position in respect of export of animal casings and recommended certain steps, including the setting up of the present Committee to examine particularly the conditions in those States which had claimed that they could meet the requirements of U.K. and U.S.A.

6.9. The Indian exporters of casings are very keen to extend their trade to U.K. and U.S.A., as the casings fit for sausage-making fetch good prices in these countries, and they have approached the Government of India for provision of arrangements for the certificates required by those countries.

6.10 *In the opinion of the Committee*, the existing conditions under which meat is produced in India—including the States of Madras, Hyderabad, U.P. and Bhopal, which had claimed availability of arrangement

coforming to U.K. standards—are far from satisfactory and need to be completely revolutionized before we can hope to attain a standard anywhere near those set by countries like U.K., U.S.A., and Canada.

6.11. At present there is no Government control to ensure that all casings—processing factories strictly observe sanitary precautions required for handling and packing this material meant for human consumption.

6.12. Complete processing of guts for the manufacture of surgical cat-gut is done in India, but the finished product is sent abroad for sterilization and grading.

The Committee recommended that—

1. Until conditions in respect of production and inspection of meat can be improved throughout the country, big slaughter-houses where large numbers of animals are slaughtered should be modernized and provided with efficient ante- and post-mortem examination services and suitable facilities for collection, cleaning and handling of the intestines.

2. The Government of India should then arrange for the required certification and take up with U.K., U.S.A. and other countries the question of casings produced at these slaughter-houses being accepted by them. For this purpose, the recommendations made for "Export Trade in Meat" (Chapter VIII) should be implemented.

3. The Government should also arrange for licensing and regular inspection of all casings-manufacturing concerns to ensure observance of necessary sanitary precautions in the handling, processing and packing of this material meant for human consumption.

4. The Government of India should provide the technical know-how and other facilities, such as machinery required for complete processing, sterilization and grading of surgical cat-gut in India.

सन्यामेव जयने

CHAPTER VII

Utilization of Animal Glands and Organs

7.1. As already stated, several animal glands and organs are utilized for the preparation of pharmaceutical products. The more important of these are listed in the report.

7.2. Many glands, organs and tissues are also utilized for preparing materials for use in various chemical processes in pharmaceutical and other industries.

7.3. At present, majority of these preparations are being imported, entailing heavy drain on foreign exchange, though India can easily be made self-sufficient in its requirements.

7.4. Liver extract is the only product regularly prepared in India.

7.5. Proper facilities for collection and storage of glands in slaughter-houses are lacking at present.

7.6. Generally speaking, the quality of the products prepared in India would appear to be comparable to that of the imported products.

7.7. The active principles of many of these glands are quickly destroyed if they are not collected immediately after slaughter.

7.8. Several hours usually elapse between collection of glands and their processing in pharmaceutical concerns. At present, there are no cold-storage facilities in slaughter-houses for storing these glands till they can be transported to the factory.

7.9. There is also no satisfactory system for fixing the prices of different glands, and these are usually dictated by butchers from time to time.

7.10. Even in pharmaceutical laboratories there is scope for improvement in the different stages of handling glands and organs.

7.11. In view of the fact that many glandular preparations are now being more economically manufactured synthetically, some experts feel that it would be undesirable to undertake their large-scale manufacture from animal glands and organs. There are others who maintain that the country should be quickly made self-sufficient in its requirements of glandular preparations, even if their production from animal glands and organs is not cheap enough.

7.12. The price of glandular preparation is largely governed by the price of the raw material and its availability in adequate quantities to permit economical manufacture. The quantities generally available from individual slaughter-houses, especially of smaller glands like the pituitary, would not, however, permit economical production of many glandular preparations.

7.13. A few unconcerted attempts towards research on the utilization of animal glands and organs have been made in India, but there is considerable need for further research on this subject.

The Committee recommends that—

1. Steps should be taken to make India self-sufficient in its requirements of glandular preparations as quickly as possible and thereby save much valuable foreign exchange which is at present being expended on importing large quantities of such products.
2. All slaughter-houses in large cities, especially Bombay, Calcutta, Madras and Delhi, should be modernized or rebuilt and equipped with arrangements for expeditious collection of glands and organs and for storing them in cold storage.
3. Centralization of all slaughter in big cities would no doubt greatly facilitate collection and utilization of glands and organs, but the responsibility of constructing and maintaining model slaughter-houses need not be taken over directly by Government.
4. The responsibility of collecting glands and organs and supplying them to pharmaceutical concerns should be taken over by the municipalities and they should suitably compensate the butchers for the extra labour involved in expeditious removal of the glands.
5. It should be obligatory on the butchers to part with any of the carcase that may be required by the municipality on payment of reasonable price.
6. Butchers should be provided with suitable containers surrounded by crushed ice for chilling glands immediately on collection, and they should be duly compensated for the extra labour involved in expeditious removal of the glands.
7. The prices of glands and organs should be fixed from time to time by special boards consisting of a representative of the State Government, a representative of the Municipality, and a representative of the pharmaceutical industry. These boards should also settle other problems relating to collection and utilization of animal glands and organs.
8. Pharmaceutical concerns should be allowed to purchase glands, organs etc. required by them only from slaughter-houses certified for the purpose.
9. The Government of India should arrange for regular inspection of all pharmaceutical concerns engaged in the manufacture of glandular preparations.
10. Some veterinarians should be deputed to selected foreign countries for training in collection and preservation of glands and organs and their utilization to best advantage by the pharmaceutical industry.
11. Well-coordinated programmes of research on the preparation and utilization of glands and organs for preparing glandular and other pharmaceutical products should be planned and at least one well-equipped research unit for the purpose should be established. Research on this subject should also be undertaken at Research Institutes, such as the Haffkine Institute, Bombay, the Indian Institute of Science, Bangalore, Indian Veterinary Research Institute, Izatnagar, and the Central Drugs Research Institute, Lucknow.

CHAPTER VIII

Export Trade in Meat

8.1. Adequate facilities are required for preserving and processing of meat meant for export.

8.2. India used to export buffalo meat to Burma, but this trade does not exist now. The meat-dehydration factories set up during the last war have also been closed down.

8.3. India, with its large livestock population, can easily build up a sizable export trade in meat and meat products. There is great demand, especially for frozen buffalo meat and piggery products, in South East Asia and certain European countries.

8.4. At present, there are very few firms engaged in the processing of meat, and efforts for promoting its export have been sporadic.

8.5. Proper veterinary certification is required by many of the importing countries, and the exporters have repeatedly approached the Government of India for suitable arrangements in this regard.

8.6. Owing to negligible demand within the country and lack of sufficient opening for export, even the few existing, meat and pork factories are not working to full capacity.

The Committee recommends that—

The Government of India should take all necessary steps to promote the export of meat and meat products and thereby earn valuable foreign exchange, and for this purpose they should arrange for proper veterinary certification, inspection of the premises concerned, and such other facilities etc, as may be required from time to time. It is further recommended that the Government of India should appoint immediately a veterinarian of high status and adequate experience of certifying meats, with adequate staff to assist him, to:

- (i) make expeditiously interim arrangements for export of meat, especially piggery products and buffalo flesh,
- (ii) inspect and certify slaughter-houses and meat-packing factories for export of meat and meat products,
- (iii) organise throughout the country inspection of all meat and slaughter-house products meant for export,
- (iv) organise inspection of meat etc. imported into India, and
- (v) keep in touch with the import regulations and requirements of veterinary certification prescribed by the importing countries from time to time.

CHAPTER IX

Control and Improvement of Meat Inspection

9.1. Production and marketing of meat is regulated by Municipal Acts, under which the local bodies are empowered to frame by-laws.

9.2. The responsibility of running the slaughter-houses and regulating inspection of meat is vested in the local bodies. There is no comprehensive legislation regulating production and inspection of meat on an all-India basis. The Government of India and State Governments act only in an advisory capacity and have no control to ensure proper meat inspection throughout the country.

9.3. Even the existing provisions in the municipal by-laws are not enforced in practice.

9.4. The present set-up in the municipalities is not adequate and effective to enforce proper inspection and control of the meat industry.

9.5. The officials actually engaged for meat inspection work have no executive powers to enable them discharge their responsibilities efficiently. The staff engaged for ante- and post-mortem examination is grossly inadequate in all slaughter-houses.

9.6. Veterinarians, by virtue of their training, are admittedly the fittest persons to be entrusted with meat inspection work.

9.7. Veterinarians have an important role not only in the production and inspection of meat but also in the maintenance of public health, many livestock diseases being communicable to man. In several advanced countries separate Veterinary Public Health Services have been organised and entrusted with inspection of meat, fish, poultry, eggs, milk and milk products.

9.8. There is no central agency specifically charged with the functions of developing and improving the conditions and standards of slaughter-houses and meat inspection practices and the various ancillary trades and industries throughout the country. Absence of such a coordinating agency for advising the States and local bodies appears to have been largely responsible for the low standards obtaining in the country and for the lack of uniformity in practices.

9.9. Some State Governments have made provisions for financial assistance to municipalities and local bodies for improvement of slaughter-houses, but so far this aid has largely proved ineffective.

9.10. There are not many persons in India fully conversant with the construction and management of modern slaughter-houses. There have been scarcely any delegations or trainees sent abroad for studying these methods, nor have the services of many foreign experts been secured for the purpose.

The Committee recommends that—

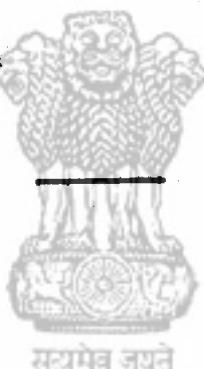
1. There should be a comprehensive legislation governing the location, construction and management of slaughter-houses, meat inspection practices, and all other allied matters.
2. Ante-mortem and post-mortem examination of all food animals, as also inspection of all human food derived from animals, should be entrusted only to fully qualified veterinarians. As veterinarians have already started becoming available in larger numbers, the implementation of this recommendation should not be delayed, and municipalities should offer sufficiently remunerative salaries commensurate with the training and experience required and the duties entrusted.
3. At the same time, the sanitary inspectors at present engaged in this work in slaughter-houses should be suitably trained further in the technique of meat inspection. The State Governments may consider starting short-term training courses for this purpose.
4. A separate Meat Inspection Service should be created for ensuring efficient working of slaughter-houses and proper meat inspection, by integrating the veterinarians and the sanitary inspectors engaged in meat inspection work. This Meat Inspection Service should form part of an over-all Veterinary Public Health Organisation. The veterinary inspectors engaged in meat inspection work should be designated as 'Meat Inspectors' and absorbed in this service.
5. The Government of India should set up a permanent Central Committee for the Development of Meat Industry and should entrust to it such necessary functions of technical advice, coordination, supervision and control as may be required from time to time. No substantial progress would be achieved unless such a Committee is established.
6. The Government of India and the State Governments should provide suitable financial assistance to the municipalities for meeting the capital expenditure required for constructing new slaughter-houses and for substantially improving those not considered necessary to be shifted to new sites.
7. The Government of India should send a small team to study the organization and working of slaughter-houses and allied industries in U.S.A. and the more advanced European countries. This team should also study the organization and functioning of the Veterinary Public Health Services in those countries where such services exist.
8. The services of one or more experts in different aspects of the meat industry should be obtained under the foreign-aid programmes.
9. Selected officers should be deputed abroad for specialized training in slaughter-house management and meat inspection practices.
10. Seminars on veterinary public health should be arranged periodically for ensuring coordinated development and progress throughout the country.

Acknowledgments

The Committee on Slaughterhouses and Meat Inspection Practices wishes to place on record its gratitude to the various Ministries of the Government of India, the State Governments and their officials for their whole-hearted co-operation in the task assigned to it. Excellent arrangements made by them for holding interviews with witnesses etc. deserve special mention.

The Committee is also grateful to those institutions and business concerns which took the trouble of replying to its questionnaires. Thanks are equally due to those official and non-official witnesses who were kind enough to give their evidences, sometimes at great personal inconvenience.

1. S. Datta	...	Chairman
2. S.R. Chadha	...	Member
3. H.S. Bawa	...	Member
4. V.K. Subrahmanyam	...	Member
5. V.A. Mehta	...	Member
6. R.N. Mohan	...	Member-Secretary



APPENDIX I

RULES AND REGULATIONS REGARDING IMPORTATION OF ANIMAL PRODUCTS IN FORM IN IMPORTING COUNTRIES

(i) United States Regulations

Order restricting the importation of animal casings.

Effective on and after December, 1, 1927.

In order to guard against the introduction into the United States of animal casings bearing the contagion of contagious, infectious, or communicable diseases of animals, it is hereby ordered, under authority of the Act of Congress approved February, 2, 1903 (32 Stat. 791), that no animal casings shall be admitted into the United States from any foreign country unless and until they are accompanied by a certificate bearing the signature of the National Government official having jurisdiction over the health of animals in the country in which the casings originated. The Certificate shall be in the following form:

Foreign Official Certificate for Animal Casings.

Place Date
(city) (country)

I hereby certify that the animal casings herein described were derived from healthy animals (cattle, sheep, swine, or goats), which received ante-mortem and post-mortem veterinary inspections at the time of slaughter, are clean and sound and were prepared and handled only in a sanitary manner and were not subjected to contagion prior to exportation.

Kind of casings	Number of packages	Weight
.....
.....

Identification marks on the packages

Consignor Address

Consignee Destination

Shipping marks

(Signature) (Signature)

(Official of the National Government
having jurisdiction over the health
of animals in the country in which
the casings originated)

(Official title) (Official title)

Animal casings which are unaccompanied by the required certificate those shipped in sheepskins or other skins as containers and those found upon inspection to be unclean or unsound when offered for importation into the United States shall be kept in customs custody until exported or

destroyed, or until disinfected and denatured as prescribed by the Chief of the Bureau of Animal Industry.

This order which for the purpose of identification is designated as B.A.I. order, 305, shall become effective on December, 1, 1927.

W.M. JARDINE
Secretary of Agriculture

(ii) United Kingdom Regulations

1. An official Certificate may be in the form of a certificate, label, mark, stamp, or other voucher; it must be affixed to the meat and meat product or to a package containing the meat or meat product by a competent authority in the country of origin.

2. Before recognising an Official Certificate, the Minister of Food will require to be satisfied that the arrangements made in the country of origin are such as to secure that the meat or meat product to which the Certificate relates has been derived from an animal found on ante- and post-mortem veterinary examination to be free from disease and that it has been dressed or prepared and packed with all necessary precautions for the prevention of danger to public health.

3. For this purpose, information will be required on the following points :—

- (a) The Authority (the Government, Government Department, etc.) which is responsible for the certification.
- (b) The nature of the arrangements in force for the inspection of meat. These arrangements should include the ante-mortem veterinary inspection of all animals and the inspection of every carcass along with the viscera.
- (c) Particulars of the regulations governing the rejection for export to the U.K. of carcasses and offals in which any disease is found. An assurance must be given that a system of meat inspection is maintained which applies a standard at least equal to that recommended in the Memo. 62 Foods and supplementary 62b Foods.
- (d) The nature of the regulations for the inspection of the processes of preparing, packing, etc. These arrangements should include the systematic inspection of premises in which slaughtering and other processes take place, in order to ensure due observation of all necessary sanitary precautions. Information should also be given as to the steps taken to secure that these precautions are enforced.
- (e) In the case of small cuts of meat packed in wrappers, and of all meat products; including canned meat, and any products containing meat such as meat extracts or essences, an assurance should be given that there will be continuous supervision from the time of slaughtering to that of packing so as to ensure that there is no possibility of the use of meat which has not been inspected and found fit for human consumption.

(f) Particulars of the form of Certificate proposed to be used. Six copies of a specimen certificate should be supplied. It would be useful if a verbal description could also be given specifying the colouring used and mentioning any variable features, such as a serial number of an Inspector's signature.

(g) Particulars of the manner in which the Certificate will be affixed, e.g. by wire sealed with a specified device.

4. An assurance should also be given that facilities will be afforded to Officers of the Ministry of Food to investigate from time to time as to the nature and adequacy of the arrangements for certification.



APPENDIX II

SPECIMEN COPIES OF CERTIFICATES

(i) Director of Veterinary Services, Sind.

This is to certify that at the request of Messrs.....
.....I have examined the undermentioned one
barrel sheep casings to be shipped to.....product
of Pakistan.

B C 3 C (1) One barrel unselected Pakistan sheep casings (5000 rings)

London

This barrel was preserved in salt for about one month before shipment, is free from flesh, and in my opinion there is no danger of importing it into London.

(Director of Veterinary Services Sind)

Karachi (Pakistan)

Seal

This is to certify that I have examined.....tins of Pakistan sheep casings marked.....bearing Nos.....destination. These casings have been in salt for a period of a fortnight before despatch and in my opinion they are in sanitary condition and fit for human consumption.

(Director of Animal Husbandry,
Sind. Karachi)

Karachi, (Pakistan)

Dated.....

(ii) Principal, Bombay Veterinary College, Bombay.

Bombay, dated.....

HEALTH CERTIFICATE

This is to certify that at the request of Messrs..... I have examined the undermentioned goods to be shipped to

Description :

Marks:

The samples collected from the above material were subjected to biological tests and were free from Anthrax spores and other contagious diseases.

In my opinion there is no danger in importing the material into The goods are in good sanitary and preservative state.

Principal,
Bombay Veterinary College and
Government Veterinary Officer
for Bombay City and Harbour.

(iii) Principal, Bengal Veterinary College, Calcutta.

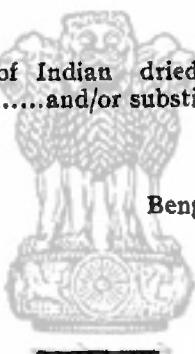
I hereby certify that representative samples of Indian dried-rolled beef casings from the group hereunder quoted and to be shipped to Hotterdam per s/s and/or substitute by Messrs..... have undergone Bacteriological and Biological tests in this College Laboratory and have been found to be free from any evidence of the presence of Anthrax bacilli or any other matters of any contagious and infectious nature.

Marks & Nos.

PRODUCE OF INDIA

868-877.....10 cases of Indian dried-rolled beef casings to be shipped to.....pr s.s.....and/or substitute.

Sd/-
Principal,
Bengal Veterinary College,
Calcutta.



APPENDIX III

LIST OF PLACES VISITED WITH DATES

1. Calcutta	...	14th to 16th July, 1955.
2. Delhi	...	16th and 17th April, 1955.
3. Bombay	...	7th and 9th to 11th June, 1955.
4. Poona	...	8th June, 1956.
5. Ahmedabad	...	12th June, 1956.
6. Hyderabad	...	22nd July, 1956.
7. Bangalore	...	24th and 25th July, 1956.
8. Madras	...	26th and 27th July, 1956.
9. Lucknow	...	27th and 28th May, 1957.
10. Bareilly	...	29th May, 1957.
11. Moradabad	...	29th May, 1957.
12. Bhopal	...	23rd December, 1957.



APPENDIX IV

REPORTS ON SLAUGHTER-HOUSES VISITED

(i) Slaughter-houses at Tangra, Calcutta. (Visited on 15th July, 1955)

(a) Cattle Slaughter house

The Committee was told that ordinarily 500 to 600 animals were slaughtered every day but at the time of inspection the number had dwindled down to about 100—150. Both cow and buffaloes are slaughtered. There are big sheds for ante-mortem examination, but it is doubtful if one doctor can do justice to the examination of even 100 animals in one day, when we take into consideration the points that examination of viscera is also done by the same doctor. In the waiting pens water trough has been provided for. Slaughter is done in the usual crude fashion by holding the animals down by force and cutting through the neck as close to the lower jaw as possible up to the vertebrae. Slaughter is done near the masonry channel which carries away the blood. The animals waiting for slaughter can see fully the fate of their predecessors and also how their carcasses are handled. Arrangement for dressing of the carcasses is extremely unsatisfactory. Contents of the intestines and the stomach can be seen strewn all over. In the hall where carcasses are hung parish dogs and crows have unchallenged right of entry and found to take the fullest advantage of this privilege.

(b) Sheep and Goats Slaughter-house

The description in respect of cattle slaughter-house applies to the sheep and goats slaughter-house. Both cattle slaughter-house and sheep and goats slaughter-house are in a common building with no partition.

(c) Pig Slaughter-house

During the summer season about 40 to 50 animals are slaughtered every day, whereas during the winter the average number is 60 to 70. Animals are detained at the pens for about 12 hours prior to slaughter for observation. The pens are of a rather crude type of cubicles with half walls on one side and provided with a masonry floor. No provision either for water trough or dung channel exists in the cubicle. The responsibility for feeding the animals during this detention period is left with the owner of the animals, the butcher. It is not difficult to imagine how the butchers discharge their responsibility in this respect. One objectionable feature of the pen or at least the series of them facing the main slaughter hall is that the animals in detention can see slaughtering being done right in front of them. The pens open into the hall having a channel 6" to 9" deep running along its length near about the centre. In the hall the animals are held by two or three persons and the neck is slit open with a not too sharp knife having edge on one side near the channel. This room is provided with water supply for purposes of cleansing. The flooring of the hall needs much to be desired. In

the adjoining room the carcases are dragged over and scalded in boiling water in order to make the removal of the bristles easier. For scalding purposes there are boilers with lids on one side of the room and a big open drum for boiling water is kept in the centre of the room. The floor below is dug in order to serve as an improvised oven. The room has no plaster on the floor and is insanitary to the extreme. The Committee had the opportunity to see scalding being done in a rather crude way.

It is extremely doubtful if ante-mortem examination is carried out at all and the post-mortem examination that is carried out is perfunctory and will not stand scrutiny even by poorest standards. The Veterinary-Doctor in attendance said that three or four animals are ordinarily rejected in one whole year for *Taenia* infection. There is a dark looking room adjacent to the pens containing a rickety table covered with a thick layer of dust, which at one time was supposed to serve the purpose of a post-mortem room. No accommodation is provided for a thorough visual inspection of the viscera by spreading them out.

(ii) **Delhi Slaughter-house**

(Visited on 17th April, 1956).

The site at Motia Khan may have been satisfactory many years ago, but at present is most unsuitable as it is in the midst of a very crowded residential locality. The premises for marketing sheep and goats is located outside the slaughter-house and has no proper arrangements for shelter against sun and rain for the animals. Over thousand animals are sold each day and to provide adequate facilities for marketing of slaughter animals, bigger area is required. The ancillary trades, such as tanneries, cleansing of guts blood boiling, etc. are located on the same site and have become a nuisance from the public-health point of view. The present site, apart from being insanitary, will provide no room for future development and expansion. It is understood that there have been frequent complaints from the residents of the area and that there have been under active consideration proposals for shifting the slaughter-house to a more suitable site, like Rohtak Road areas or across the Jamuna. The staff available consists of a retired veterinary graduate as Superintendent and 5 sanitary inspectors. For the number of animals slaughtered the staff is not considered adequate nor are the sanitary inspectors fully qualified. The ante- and post-mortem examinations are carried out in most perfunctory manner and do not serve a satisfactory safeguard to the health of the meat consumer. It was reported that the transport arrangements for meat to the city were being improved. A register of condemnation of organs and carcases has been opened with effect from March, 1956. The major portion of the casings from sheep and goats was said to be used locally for making tennis racket gut etc. What proportion of the casings is actually exported outside the country could not be ascertained. The *halal* slaughter house for goats and sheep, which deals with about 1200-1400 animals per day, is in a dilapidated condition. The roof has given way in many places. There is no wire-netting to prevent the menace of vultures and crows. There are no arrangements for lairage of animals for resting or for carrying out a

proper ante-mortem examination. The facilities for housing and watering of animals also require to be improved. The space for slaughtering has to be increased. The flooring and the channels should also be improved.

The Jhatka slaughter-house is apparently sanitary. It was reported that 70 to 80 buffaloes were slaughtered every night. The space for the slaughter-house would thus appear to be inadequate, but it otherwise appears to be maintained in a fairly sanitary condition.

(iii) Kondaw Slaughter-houses, Poona.

(Visited on 8th June, 1956)

There are (i) the municipal slaughter-house for (a) cattle and buffaloes and (b) sheep and goats, (ii) the slaughter-houses of the Poona Cantonment Board for (a) cattle and buffaloes and (b) sheep and goats, and (iii) the military butchery. The slaughter-house for cattle and buffaloes is neither fly-proof nor crow-proof, and it needs considerable improvement. The municipal slaughter-house for sheep and goats is in a much better condition and needs only minor improvements ; it is crow-proof but not fly-proof. The floors and walls need improvements badly. The military abattoir is the best of the three. The Cantonment Board slaughter-house also needs to be improved, especially by way of a suitable lairage, watering trough, etc. The Committee saw the animals which had come for slaughter. The sheep and goats were generally in fair health, but the same could not be said of cattle and buffaloes, majority of which were found to be in an emaciated state. While there was some sort of ante-mortem inspection, especially by the Government veterinary surgeon, whose duty is to ensure the observance of the Government Act. The Committee felt that the conditions in respect of post-mortem examination were hardly satisfactory.

The site of the slaughter-houses appeared to be quite suitable for the purpose, situated on an elevated land at reasonable distance from the town and connected with it by motorable road. Ample scope exists for any expansion that may be found necessary and also for the setting up of the subsidiary industries. The drainage system and the disposal of blood, ingesta, etc. appeared to be satisfactory.

(iv) Slaughter-houses in Bombay.

(Visited on 9th June, 1956)

(a) Bandra Slaughter-house.

The site of this slaughter-house when it was originally constructed, might have been well removed from residential quarter but it is now in the midst of a residential locality. The total area is rather small, and much expansion of the present premises is not possible. The slaughtering space is extremely limited with the result that there is a very great degree of over-crowding. The cattle slaughter-house was originally meant for about 50 cattle, but now about 250 are being slaughtered everyday. Similarly, the sheep and goat slaughter-house was originally meant for 500 animals only but it is now handling about 2,500 animals every day and this number often goes up to 4,000 and beyond, especially on holidays.

The Slaughter-houses have no bird-proof or fly-proof arrangements. Some birds mostly crows were actually found pecking at the flesh, inside the abattoir itself. Animals are slaughtered in the presence of one another and sheep and goats are actually thrown into heaps one on top of the others immediately after the throat is cut and before the animal is dead or is completely bled. There are no proper channels for drainage of blood, etc. A hurried ante-mortem examination is done. The arrangements for post-mortem examination are not satisfactory while in some cases glands and organs are quickly removed away from the carcasses more or less soon after slaughter for sale to waiting purchasers and it is usually not possible to identify the carcasses to which they belong. Carcasses in other cases remained unopened for a couple of hours and even if opened the removal of glands is delayed considerably. The number of inspectors is five and this in consideration of the number of animals to be examined in life and after slaughter is much too small. All meat is transported in a fleet of municipal vans which are sealed, to the different markets, with the exception of some organs which are sold near the slaughter-house. The waiting sheds have inadequate accommodation. There is no proper arrangements for tying the animals and the water supply is not quite satisfactory. Children move about freely in and around the slaughter house, and are actually associated with the slaughtering practices. Blood is taken to be the property of the municipality. A contractor takes it, boils it and sells it for manurial purposes.

The Committee also interviewed some butchers, who emphasised certain difficulties which they are experiencing. Their chief difficulty appeared to be want of timely supply of wagons for transporting the animals to Bombay, often from far away places. Wagons loaded with animals frequently lie stranded for days on some wayside stations, where it becomes difficult to arrange for their water and fodder with the result that some animals actually die before reaching the destination. During summer the wagons often get unbearably hot.

Certain glands, such as the liver, pancreas, heart, thyroid and pituitary glands, are collected by some of the local pharmaceutical firms. Liver goes mainly to the T.C.F., and pituitary to Cipla Remedies. Liver and blood are taken by Raptakes Breet & Co., and thyroid by the Continental Drug Co. These supplies are, however, not regular except in the case of liver. Pituitary sells at 1 to 2 annas, thyroid at $\frac{1}{2}$ to $\frac{1}{3}$ anna per gland, and pancreas at 10 to 12 annas per lb. In the case of hides and skins the forward contract system is usually followed. Over 2,000 persons and their many dependants subsist on the returns from slaughter-houses. The slaughtering mullas are not employees of the Corporation.

(b) Pig Slaughter-house, Arthur Road.

This slaughter-house is situated in the heart of residential locality and the residents often complain about its location there. Slaughtering often goes on up to the early hours in the morning and the residents are greatly disturbed by the squeaks of the pigs. The method of slaughtering is not free from objection. Arrangements for ante-mortem examination and post-mortem examination appear to be satisfactory. A qualified veterinarian is always present at the time of slaughter and a table under a powerful light is provided for examining organs, etc.

(c) Jhatka Slaughter-house

The Jhatka slaughter-house is private and licensed. It is situated close to the pig slaughter-house in the locality. This slaughter-house is, however, well planned and the construction is such that it is easy to maintain it in a clean state. Arrangements for housing the animals prior to slaughter are satisfactory, as are those for slaughtering and subsequent handling of the carcasses. Suitable troughs have been provided for cleaning the entrails and proper hooks, etc. are available for handling the carcasses. There is, however, no satisfactory arrangement for ante-mortem or post-mortem examination, though a veterinary inspector attends for about an hour every morning. Only goats are slaughtered here, and usually some 10-15 animals are slaughtered, except on holidays etc., when the number may rise to 60-70.

(v) Jamalpur Slaughter-house, Ahmedabad.

(Visited on 12th June, 1956).

The slaughter-house occupies an area of about $2\frac{1}{2}$ acres. There is one block for large animal and one block for sheep and goats, one separate small slaughter-house for Jhatka and one small room for Jewish method. Slaughter of large animals is done on 6 days in the week, and there is no slaughter on Thursday night. The cattle and buffaloes slaughter-house is fairly well planned and provides adequate space for present numbers. It is bird-proof and generally fly-proof, except that it needs minor repairs. Flooring is in a fairly good state; the slope is good, and the drainage appears to be efficient. The waiting shed is, however, not so well planned.

The same general remarks apply to the sheep and goat slaughter-house but here the slaughtering space is inadequate. Usually about 400 to 500 sheep and goats are slaughtered, but on holidays and special festivals the number rises to 1200 or even more.

The blood is collected by a contractor and sold as manure after processing outside the municipal limits. Now-a-days the market for blood manure is down and the contractor is not collecting the blood. So it goes through the drains to the municipal sullage form. During the rains it becomes impossible to process the blood.

Livers are collected, kept in ice over night in special containers supplied by the manufacturing pharmaceutical firms and delivered at Baroda to :—

- (i) Ahmedabad Chemical Works Ltd.,
- (ii) Sarabhai Chemical Works Ltd.,
- (iii) Sainted Chemical Works Ltd.

The price charged is about 10 annas per pound. Cow and bull guts (about 30-35 are removed and processed). They are washed in the slaughter-house and then delivered to the local factory of Mohd. Yamin, where casings are made and forwarded to Bombay for export. Formerly a ring of 200 yards (9 intestines) fetched about Rs. 22, but

now-a-days it fetched only Rs. 5. One worker prepares casings from seven animals per day working eight hours a day on a salary of Rs. 80-100 per month.

Sheep and goat intestines are washed and collected by a contractor who further cleans them and processes them to some extent. These are packed in tins, with salt sprinkled, and sold to A.D. Meyer & Sons, Bombay.

(vi) **Ambari Slaughter-house, Hyderabad.**

(Visited on 22nd July, 1956).

This slaughter-house is divided into two sections, one for slaughtering sheep and goats, and the other for cattle and buffaloes. The site is unsuitable because it is too close to residential areas and lacks proper facilities of water and drainage. The lairage or yard for the cattle is not provided with any cover, flooring, or even drainage. During the monsoon the animals have to stand in heavy mud and slush, 8 to 10 inches deep, so much so that the animals find it difficult even to move about, and sometimes the very weak animals die even before the actual slaughter. The slaughter-house itself was neither bird-proof nor fly-proof. There were no proper arrangements for carrying out ante- or post-mortem examinations. The blood from the animals slaughtered was wasted and not utilised for any purpose.

The section where sheep and goats are slaughtered was in a better condition, and the lairage was also somewhat better. This slaughter-house also was not bird and fly-proof. This section also suffers from the same defects as regards ante- and post-mortem examinations and the personnel employed for carrying out such examinations in the slaughter-houses was not fully qualified for the job. There is no Veterinary Officer employed by the Corporation.

(vii) **Secunderabad Slaughter-house**

(Visited on 22nd July, 1956).

This slaughter-house was originally built by the military authorities and was later on handed over to Secunderabad Corporation. The slaughter-house was located at an elevated site, with good drainage facilities, and all the lairage space was dry and clean. Due to the site being high there was inadequate water supply. The lairage shed where the cattle are kept before slaughter, seemed to be not big enough. No arrangement existed for supply of drinking water to the animals awaiting slaughter.

The section where sheep and goats are slaughtered was satisfactory but needed certain improvements to make it fly and bird-proof. The section where cattle are slaughtered also needs some improvements. There were no proper arrangements for carrying out ante-and post-mortem examinations. The official appointed for the purpose did not have up-to-date knowledge in the technique of meat inspection.

(viii) Slaughter-houses in Bangalore

(a) Civil Area Slaughter-houses.

(Visited on 24th July, 1956).

Adjoining the slaughter-house there is an open space where sheep and goats are brought and sold to butchers for slaughter. The animals are allowed into the slaughter-house through a narrow passage. Where each animal is inspected by a qualified veterinarian. Post-mortem examination is also said to be carried out by the veterinary surgeon. Generally, however, the examination is not carried out as it should be, owing to the number of animals being large and the staff inadequate. The slaughter is done between 12 noon and 6.00 p.m. The slaughter-house is not bird and fly-proof, and the animals are slaughtered within sight of the others awaiting slaughter. The flooring and the drainage of the slaughter-house is satisfactory. There are no facilities for examining the slaughtered carcases with the viscera. The dressed carcases are hung overnight in an aeration room, and these are removed early next morning and distributed to the different markets and shops by the municipal vans.

The cleaning of guts and stomachs etc. is carried out by women employees of the contractor in a haphazard manner. The blood is collected in a cemented pit and removed by a contractor with offals, dung and other refuse. The system of disposal of blood is wasteful and not satisfactory. The slaughter-house on the whole was on hygienic lines.

Adjoining the sheep and goat slaughter-house there are two buildings which were formerly utilized for slaughtering of cattle and for aeration of other carcases. These have not been in use since the ban was placed on cow slaughter in 1947. The Committee was rather pleased to notice a fleet of four good, clean and fly-proof vans kept by the Municipality for the distribution of meat free of charge.

The Committee also visited the *Pig Slaughter-house* which was in a poor state needing repairs. It was reported that electric stunning used to be carried out some years ago, but this has now been suspended. Only 3 or 4 pigs are slaughtered per day. No satisfactory arrangements exists for carrying out ante- and post-mortem examinations.

(b) City Slaughter-house, Bangalore.

(Visited on 25th July, 1956).

When the Committee visited the slaughter-house, slaughtering was in progress and about three hundred animals were to be slaughtered. The slaughtering was being done in the open yard on the floors as well as inside the sheds, which were all very much over-crowded. The offals were being washed in one dark corner of the shed. The number of human beings inside the different parts of the slaughter-house, besides the large number of animals slaughtered, the different organs, that had to be dealt with, and the carcases that had to be hung up, were too many for the extremely meagre space that was available in the slaughter-house. There was no possibility of ante-mortem and post-mortem examination in the

slaughter-house. Besides, the location was most unsuitable. This slaughter-house had outlived its usefulness and it is urgently necessary that it be removed to a more satisfactory location, away from the heart of the town.

The site where the new slaughter-house is proposed to be erected is a wide open ground in front of the cantonment slaughter-house. Although the land is low lying, yet by proper drainage the site could become a very suitable one. As the land already belongs to the Corporation, no procedure for acquisition would be necessary and the Corporation would be in a position to allocate sufficient area (about 20 acres) for the slaughter-house and its ancillary trades. Building of quarters for the workers would also be possible on the spot. The market for livestock could also be located at a convenient distance from the slaughter-house. The Committee was satisfied that the proposal of the Municipal Corporation would be in the best interest of the work and will enable extensions that are merely to take place in the years to come.

(ix) **Perambur Slaughter-house, Madras.**

(Visited on 26th July, 1956)

The Committee visited this slaughter-house and found that, although a few huts and other houses had been set up near about the slaughter-house, its location on the whole was such that it could be regarded as fairly well removed from human habitation, and it was not absolutely necessary to shift it immediately. It provided sufficient scope for expansions and such other minor improvements, additions and alterations that might be necessary in the coming years. It would however, be desirable at a future date to consider removal of this slaughter-house to a better location. It was understood that up to about 100 cattle, including buffaloes, might be slaughtered each day. The slaughtering sheds meant for cattle seemed to be sufficient for the present. Many crows were, however, present in the sheds and were found pecking at the carcasses. Wire-netting, to prevent the inroads of vultures, crows, etc., should be provided, and children of tender age should not be allowed into the slaughter house.

Sheds provided for the slaughter of sheep and goats were sufficiently spacious, and these were found to be clean and bird-proof. Drainage and flooring appeared to be satisfactory. Some minor improvements would be necessary, but on the whole the abattoir for sheep and goats appeared to be one of the best in the country. The lairage available for sheep and goats were inadequate and need to be expanded considerably. It was noticed that animals were being slaughtered in the sight of those awaiting slaughter. There was scope for improvement in the ante-mortem and post-mortem examination of cattle and sheep and goats, and the staff would require to be considerably reinforced to make the examination sufficiently effective. The two vans provided by the Corporation for the transport of meat to the markets require to be supplemented by the provision of additional vans.

(x) Slaughter-Houses in Lucknow.

(Visited on 28th May, 1957)

(a) Motijhil Slaughter-house.

The Committee visited the slaughter-house Motijhil where buffaloes are slaughtered. The slaughter-house is situated at a high level, but the connecting road passes through a low-lying area. It was brought to the notice of the Committee that during monsoon the road is flooded and remained under water for a long time which created difficulties in the removal of dressed meat for sale in the city.

The building of the slaughter-house was found to be in a very bad state and the accommodation was not adequate for slaughtering and for carrying out proper meat inspection. Facilities like water, light and proper drainage were lacking. No proper hooks and pulleys were provided for hoisting the animals for flaying. Many hides were reported to be spoiled by flaying the animals on the ground. The area around the slaughter-house was found to be in a very insanitary condition. It was noticed that small boys were allowed free entry into the slaughter-house and were engaged in different processes of slaughtering and dressing the animal. No proper ante- and post-mortem examination is carried out. There is only one veterinary official, who has to look after three slaughter-houses in the city, and it is not possible at all for one man to do the job.

(b) Aishbagh Slaughter-house.

At this slaughter-house sheep and goats are slaughtered. No adequate arrangements are available for the supply of water and light. It is very essential to have proper arrangements of light, as generally the slaughtering is carried out in the early hours of morning. On account of absence of proper arrangements of light, many goat and sheep skins are spoiled by cuts. The slaughter-house did not have facilities for hoisting animals for flaying. No proper arrangement existed for carrying out post-mortem examination. The enclosed space where the animals are kept for resting before slaughter had no provisions of shelter against sun and rain. The slaughter-house lacked proper ventilation.

(c) Chick Mandi Slaughter-house.

At this slaughter-house only sheep and goats are slaughtered. The slaughter-house is situated in the heart of the city. It has a small area just enclosed by four walls. It has no roof or shed to protect it against the rain and sun etc. The flooring of the slaughter-house was in a very bad state and it had deep crevices filled with blood and muck and the cleaning of such a floor is impossible. There are no proper arrangements for lights for slaughtering of the animals during the early hours of the morning. This slaughter-house should be removed, as it is not right to keep it in the midst of a thickly populated residential locality.

(xi) Slaughter-Houses in Bareilly.

(Visited on 29th May 1957).

(a) Buffalo Slaughter-house, Shamat Ganj.

This slaughter-house was constructed in 1928 well away from human habitations, although some new residential colonies are now coming up

at a distance of about 1.2 furlongs. The general lay-out of this slaughter-house appears to have been well planned, with adequate slaughtering space, suitable partitions, good drainage, and plenty of water supply provided through an over-head water tank. The wire netting have now broken down and many white tiles lining the walls are missing and require replacement. The floor of the slaughter-house is in a bad condition and needs to be repaired. Blood and other waste material percolate beneath the floor which cannot be cleaned by washing. There are no arrangements for supply of water these days. The over-head tank, which was built for the supply of water to the slaughter-house, has not been in a working condition for a long time. The slaughter-house is itself very spacious and can be modernised. It is understood that the State Government is proposing to give a grant of Rs. 10,000 this year for the improvement of the slaughter-house during the current financial year provided the Municipality agrees to spend at least an equivalent amount. There is no proper lighting arrangement.

In the neighbourhood of the slaughter-house there are godowns for storage of slaughter-house bye-products, such as hides, bones and fats. A godown meant for storage of bones has a big compound enclosed by high walls and is used for drying bones for storage. Similar arrangements exist for drying and storage of hides. The Committee thought that such arrangements for storage and cleaning of bye-products in other slaughter-houses of India would be a step in the right direction.

The Municipality is using its slaughter-houses for making blood-meals.

(b) Slaughter-house for Small Animals

It is situated in a residential locality of the city. The slaughter-house has no roof and there are no arrangements of water supply and light. The floor of the slaughter-house is in a very bad condition. There are no arrangements to keep the birds away from the dressed carcases. No arrangements exist for washing and cleaning the guts.

(xii) Large Animal Slaughter-House, Moradabad.

(Visited on 29th May, 1957).

The slaughter-house is very spacious but it has no proper roof. There are no partitions for slaughtering the animals away from the sight of the other animals. The floor of the slaughter-house is in a very bad condition and it is not possible to clean it properly. The premises on the whole and the surrounding area were found unclean and infested with flies. Water supply and lighting arrangements are poor, so is the drainage.

(xiii) Bhopal Slaughter-House.

(Visited on 23rd December, 1957 by Shri R.N. Mohan,

Member-Secretary of the Committee.)

The slaughter-house in Bhopal is located in the Chandni mohalla, which is a fairly thickly inhabited area of the town. It consists of two small, old buildings, separated by a narrow path. One of these buildings

is used for slaughtering sheep and goats. A part of the second building is used for slaughtering buffaloes, and the remaining part is used as buffalo meat market, which is grossly overcrowded and unhygienic. The general design of the buildings is unsuited for purposes of a slaughter-house.

The buildings are not fly-proof or bird-proof, and need repairs and improvement in various ways. Electric supply is provided, but water-supply is inadequate. The flooring and drainage on the whole are passable, but no arrangements exist for collection and utilization of blood. The washings collect in some pits outside the buildings, where they overflow and spread on to the surrounding grounds. These are daily collected in closed carts and dumped outside the town.

Slaughtering is done every morning from 4.00 a.m. to 6.30 a.m., except that on Fridays there is no slaughter. Post-mortem examination is practically non-existent, though it is said that occasionally some organs are condemned by the Sanitary Inspector who attends the slaughter-house in the mornings as his part-time duty. The Government Veterinary Assistant Surgeon of Bhopal attends the slaughter house for about an hour every evening for the ante-mortem examination, but this is largely for the purpose of the Act banning the slaughter of productive animals. The rejected animals are not branded. There are three slaughterers employed by the Municipality. The fees charged are two annas (12 naya paise) in the case of sheep and goats and Re. 1/- for buffaloes. On the whole, the conditions under which meat is produced in the slaughter house and marketed in Bhopal are extremely unsatisfactory.

Some 20-25 buffaloes are slaughtered daily; and the number of sheep and goats slaughtered every day is about 120-150. These numbers have increased recently owing to increase in the population of the town, which at present is estimated at 1,40,000. Bhopal being now the capital of the reorganized State of Madhya Pradesh, the population is likely to increase manifold and very rapidly. This would necessitate slaughter of animals in much larger numbers than at present.

Buffalo hides are sold after flaying at an average price of Rs. 15-17, but the flaying tools are primitive and defective. Buffalo guts are not utilized but intestines of sheep and goats are processed and supplied every month to A.D. Meyer and Sons in Bombay and also to one or two firms in Delhi. The average monthly supply is about 1500 reams of 75 feet each sold at Rs. 75-80 per hundred ream. No attempt is made to collect and utilize glands and organs for pharmaceutical purposes. A few pharmaceutical firms are reported to have made enquiries, but the supply did not materialise for want of satisfactory meat hygiene practices.

The Bhopal Municipality has under consideration a proposal for setting up a new slaughter-house away from the inhabited areas at an estimated cost of Rs. 1,53,800 which also includes provision of fly-proof vehicles for transporting meat and for a suitable meat market. This has probably been the major factor responsible for the continued neglect of the present slaughter-house, and it might take many years before the new slaughter-house actually goes into operation. Bhopal is one of those towns where the existing slaughter-house be closed down and a new, properly designed, slaughter-house should be set up immediately.

APPENDIX V

REPORTS ON PIGGERY PRODUCTS MANUFACTURING CONCERNS VISITED BY THE COMMITTEE ALONG WITH SEPARATE INSPECTION REPORTS BY SHRI H.S. BAWA.

(i) (a) Martin's Piggery and Factory, Dum Dum, Calcutta.

(Visited by the Committee on 25th July, 1955).

The factory has been lying closed for a considerable time. Mr. Martin explained that he started this piggery farm in collaboration with the American Army during the last war. He explained the process adopted by him in the manufacture of ham and bacon and other piggery products. He possessed a capacity for dressing 100 pigs a day, although as many as 300 could be slaughtered in 24 hours. He explained that the pigs were slaughtered by him by sticking and electric stunning was not done. The slaughtered animals were hoisted up upside down in order to ensure perfect bleeding. They were then scalded in a tank of hot water where a temperature of about 145°F was maintained. This was done in order to loosen the hair. Scudding or removal of hair was done by manual labour. The carcase was then dressed and intestines were removed for use in the manufacture of sausages. Mr. Martin explained that very often he had to condemn carcases which were found unfit for human consumption. The dressed carcases were kept in a chilling room in order to reduce the body temperature. They were then cut into different portions for the manufacture of ham and bacon. He informed that the American army preferred dry curing instead of wet curing. Dry curing was done after injecting the bacon with a pickle made out of a mixture of sodium chloride and salt-petre and by stacking the cuts on top of each other with a layer of dry salt and salt-petre in between each cut. Mr. Martin informed that it took about a week for the dry curing to be completed. The bacon was then smoked for about 10 hours in a smoke room using ordinary saw dust for this purpose. The smoked bacon was then kept at a temperature of about 60° F in a cold room from where it was sent to the canteens of the American army.

Mr. Martin explained that he also used to manufacture sausages and he showed us an automatic sausage making machine. (Peerless make).

On the termination of war, Mr. Martin started a fruit canning factory, which is also lying closed these days. It was explained to the members of the Committee that the present market depression and competition from other manufacturers and lack of finance were responsible for the closure of the factory. Mr. Martin welcomed the suggestion of Dr. S. Datta, Director of Animal Husbandry and Veterinary Services, Bengal to throw open his buildings to the smaller manufacturers of piggery products, so that they could do their job in more hygienic surroundings.

(i) (b) **Factory of Messrs Martin Process (Private) Ltd.,
6-Dum Dum, Calcutta.**

(Visited by Shri H. S. Bawa on 29th March, 1957).

The factory at present is not working and no animals are being slaughtered. Therefore, the standard of ante-mortem and post-mortem examination could not be verified. Mr. Martin explained that he started this piggery farm in collaboration with the American army during the last war. During that time hundred pigs a day used to be slaughtered and these were inspected by veterinarians of American army. I was told that on average 10% of the pigs slaughtered were found to be suffering from diseases which necessitated condemnation as unfit for human consumption.

The firm lately have been doing occasional slaughtering whenever there was a demand from the army or from foreign countries. The firm is eager to take up work of producing pork and other piggery products for export if arrangements for veterinary certification could be made to the satisfaction of importing countries.

The factory has ample space for resting the pigs before slaughter. Good facilities exist for slaughtering pigs and about 100 pigs a day can easily be handled. The factory is well fitted and has a scalding tank-steam jacketed, pulleys for carriage of carcasses, aluminium top tables for scraping and cleaning the carcasses and there are 15 gambals for hanging pig carcasses and ample space and tables for veterinary inspection.

On the premises incinerator is also available for burning condemned carcasses and organs. The factory is well equipped with cold storage facilities with the chilling room measuring 80' x 20' x 9' with a temperature of 30° to 40° F. For the purpose of chilling the carcasses are generally kept for 24 hours before they are processed into piggery product. There is also a freezing room which is used for freezing the carcasses for export purposes, or internal use. The Firm at present has no arrangements for veterinary inspection but is ready to employ a veterinarian to carry out ante-and post-mortem examination if the Government of India can make arrangements for recognition of the veterinary certificate issued by the veterinarian employed by the firm.

The firm has adequate facilities for tinning the piggery products and I was shown an automatic sausage making machine (Peerless make) and an automatic vacuum tin sealing machine. The machine is of the latest style and is used for tinning meat products.

I was shown some of the products tinned by the firm such as cocktail sausages, Oxford sausages, bacon, ham etc. Some of the tins were opened and contents were found to be sound.

I am of the opinion that Mr. Martin is very well conversant with the trade and knows the job of producing tinned products and if some arrangements could be made for meeting the veterinary certification requirements of importing countries, I am sure this firm will be able to increase their business considerably and earn foreign exchange for our country.

The existing capacity of the slaughter houses and the factory in the line of meat is as follows :

- (i) 100 carcases per day, and
- (ii) 50,000 lbs. of tinned meat (pork) per month.

(ii) (a) **Report on Essex Farms Ltd., Delhi.**
(Visited by the Committee on 16th April, 1956).

The Committee saw the complete working of the factory from the arrival of the pigs to the ultimate disposal of bacon, ham, sausages and other piggery products, including canning, packing, storage etc. The Committee were of the opinion that the general standard of sanitation for the production and packing of the various piggery products was up to the mark and should be acceptable to foreign buyers. The factory is well equipped with modern appliances and has adequate cold-storage facilities. The Committee was, however, of the opinion that before the Government of India can certify the products as satisfactory, the following conditions will have to be fulfilled:—

- (i) Necessary arrangement should be made by the firm to ensure thorough ante-slaughter and post-mortem examination by a qualified veterinary surgeon.
- (ii) The firm should appoint qualified veterinary surgeon for carrying out thorough ante-mortem and post-mortem examination according to the meat-inspection rules of U.K. and U.S.A.
- (iii) The Government of India may nominate a Government veterinary officer to inspect periodically the premises and to satisfy himself that the required standards are being maintained. The Government of India may empower this officer to issue certificates.

The Committee was informed that the proprietor of Essex Farms Ltd., Delhi is prepared to fulfil the above two conditions. In that case the Government may contact the authorities in U.K. if the arrangements as suggested above will be acceptable to them for importation of piggery products from Essex Farms Ltd., Delhi and other firms in India fulfilling the conditions mentioned above.

(ii) (b) **Messrs Essex Farm Ltd., Mehrauli Road, Delhi.**
(Visited by Shri H.S. Bawa on 11th April, 1957).

The premises of the farm have ample facilities for resting the pigs before slaughter and I was told that the pigs are generally rested for 2 to 3 weeks before they are actually slaughtered. The Essex Farm employs a part-time veterinarian for ante- and post-mortem examination but the arrangements are not satisfactory as the veterinarian is at times not available to carry out the inspection and he is also not very well up in the technique of meat inspection.

The Essex Farm is well equipped with appliances for tinning and has adequate cold storage facilities. The tin sealing machinery used at

the Farm was not of modern type. The space for the meat inspection was rather inadequate. This farm is slaughtering on an average 20-40 pigs a day depending upon the demand. M/s. Spencer and Co., are their sole agents for distribution of piggery products. The general standard of sanitation for the production and the packing of the various piggery products was upto the mark and should be acceptable to the foreign buyers. The products produced by the farm are pork, bacon, ham, sausages and luncheon, meats etc.

The proprietor of the farm Shri R.N. Goyle showed me the changes he is going to make in the present factory in order to increase the handling capacity of the factory. Shri Goyle knows thoroughly the technique of making piggery products and also he has sent his son to England to obtain up-to-date knowledge in the production and preparation of piggery products. The Farm at present has no incinerator for destroying the condemned carcasses and organs.

If arrangements could be made by the Government of India to enforce proper ante-and post-mortem examination then Essex Farm could easily meet the requirements of the importing countries and be in a position to increase its capacity from 40 to 100 pigs per day.

(iii) Central Dairy Farm, Aligarh

(Visited by Shri H.S. Bawa on 12th April, 1957.)

The Central Dairy Farm, Aligarh has a section which deals with the breeding of the pigs and preparation of the piggery products. The farm has adequate facilities and space for resting and slaughtering pigs and to carry out ante- and post-mortem examination. This farm keeps a stock of pigs for breeding purposes and to distribute boars to the co-operative societies situated round about Aligarh in order to improve the local stock. These co-operative societies sell the pigs to the farm on market rates and these pigs are slaughtered by the farm for the production of pork and other piggery products. The breed generally used for making piggery products is middle-whites. There is a Government Veterinary Assistant Surgeon who looks after the ante- and post-mortem examination of the animals. At the time of my visit I could not see any post-mortem examination being carried out by the Officer-in-Charge as slaughtering had taken place early that morning. Therefore, it is not possible to make any remark as regards the standard of ante- and post-mortem examination existing at the farm. The Veterinary Surgeon informed that there was hardly any disease except foot and mouth disease among the pigs slaughtered at the farm and at no occasion the carcasses had been condemned as unfit for human consumption. Somehow I am not convinced that the pigs slaughtered at the farm could be absolutely free from disease and no animals have been found to be unfit for human consumption. It seems probably the post-mortem examination is not very thorough.

This farm is well equipped for producing piggery products such as bacon, ham, sausages etc. The farm has ample cold storage space to handle 40 carcasses of pigs a day. The Farm can easily increase its capacity to handle 100 pigs per day with little additions and alterations. The Piggery Section of the farm specially where the piggery products are

produced is run under the supervision of a German expert who knows exactly what is required to be done in producing such products to meet the requirements of Western countries. The general standard of sanitation for the production and packing of the various piggery products was upto the mark and should be acceptable to foreign buyers. The products from this farm can only be imported if satisfactory arrangements could be made for acceptance of veterinary certificate.

COMMENTS AND SUGGESTION FOR ENCOURAGING EXPORT OF MEAT

When at Calcutta, I contacted another firm M/s. Wing Sun and Co., this firm was interested in the export of buffalo meat but were unable to do so due to non-acceptance of veterinary certificate by the importing countries. Lot of correspondence was shown to me by the firm and also by M/s. Martin Process (Private) Ltd., the letters were addressed to the Ministries of Commerce and Consumers Industries, Food and Agriculture and different departments of the Ministry of Food and Agriculture such as Directorate of Economics and Statistics, Directorate of Marketing and Indian Council of Agricultural Research etc. It seems the subject is being handled by various officers in the Ministries.

So far India has not taken any active steps to promote export of meat and meat products. In India we have a large livestock population and if serious thought is given a large of foreign exchange can be earned by export of meat. Of course, we all have to agree and take into consideration the sentiments of the people at large as regards slaughtering of cattle for the production of beef. We may, for the time being, not consider at all the export of beef but the flesh from other animals specially from buffalo and pigs can find a ready market in foreign countries. Before the importing countries will accept our meat and meat products, certain requirements of veterinary certification as regards the freedom from disease of animals slaughtered for the production of meat and meat products will have to be fulfilled. At present the conditions prevailing in our country at large as regards ante-and post-mortem examinations are far from satisfactory. Therefore, no headway has been made towards the export of meat-and meat products.

The meat in the form of frozen carcases can only be exported from port towns such as Calcutta, Bombay and Madras because at present we have no refrigerated rail transport to carry out meat carcases from inland slaughter-houses to port towns. At ports there are in existence good facilities of cold storage where the frozen carcases can be kept before shipment to importing countries. From these cold-stores the carcases can be moved by means of insulated vans to cold storage holds of ships.

The estimated production of buffalo flesh in India is over 91 thousand tons and which can be easily increased if there is a further demand. The present production of pork in India is only over 33 thousand tons but this can be considerably increased in a short time once we create the demand from the exporting countries. There is no other animal which can multiply so quickly as the pig.

There is a demand for buffalo meat from countries such as Burma, Hongkong, Singapore, Japan, etc. and of pig products from Belgium, Germany, France, Hongkong, Burma, Tibet and Singapore.

The exports and imports are the responsibility of the Government of India and if any headway is to be made in the export of meat, it is essential that Government of India may take over the responsibility of certifying the meats for exports.

I offer the following suggestions:—

I. There is a need for a whole-time highly qualified officer of a high status at the centre, who should be responsible.

(i). To organise meat inspection services in India for purposes of export.

(ii) To study the requirements of veterinary certification of different importing countries:—these differ from country to country.

(iii) To organise inspection service of meats imported into India.

(iv) To certify slaughter-houses fit for slaughter of animals meant for export; and

(v) To licence meat packing factories and to see and enforce that the general standard of sanitation is maintained at these packing places.

At Calcutta, Delhi and Aligarh where piggery products are being produced, or can be produced for export, veterinary inspectors for carrying out ante-and post-mortem examination should be appointed at central Government cost. The part of this expenditure can be met by charging a small fee for inspection of per pig or per maund of carcass weight. The inspectors so appointed can also be used for inspecting other animals i.e., buffaloes, poultry etc., meant for export. Once the meat export trade gets established, the entire expenditure of the inspectorate staff can be met with by a charge of fees suggested above.

3. It may be essential to build special small slaughter-houses for slaughter of animals only meant for export or certain portion of existing slaughter-houses may be demarcated for this purpose.

4. If facilities exist for slaughter of pigs at a certain place such as at M/s. Martin Process (Private) Ltd., such places may be declared as slaughter houses meant for slaughter of pigs for export. Any party can bring their pigs for slaughter at such places and pay a fixed fee for slaughtering and cleaning etc.

Unless a concerted effort is made, the meat export trade will never see the light of the day.

APPENDIX VI

REPORTS ON PHARMACEUTICAL CONCERNS VISITED

(i) Teddington Chemical Factory, Bombay.

(Visited on 9.6.56.)

The Committee saw the process in which livers were handled for preparation of liver extract. The firm is not manufacturing any other glandular products, but it uses pancreas etc. for purposes of tryptic digestion. The livers are collected mainly from buffaloes and especially from the slaughter-houses in Bombay and Madras. The Madras consignments are received twice weekly. Ordinary aluminium containers are used for transporting the livers on ice.

(ii) (a) Raptakos Brett & Co. Bombay

and

(b) Zandu Pharmaceutical Works, Bombay

(Visited on 10.6.56)

The production of biological products by Raptakos Brett & Co. was started in 1941. The only biological product manufactured by them is liver extract, but they use liver, pancreas, stomach, intestines, muscle tissue, bile and blood for making various other preparations. Sometime ago they also used para thyroids, but these were chiefly imported from abroad. The liver is collected mainly from Bandra (Bombay) supplemented by supplies from Poona and Hyderabad received in ice. 100 livers are utilized every day on the average.

Local bovine liver costs 10-12 annas per pound, but that from mofussil areas costs about 6 annas per pound. Work done in the laboratories of this firm has shown that, contrary to general belief, Indian animal livers give higher vitamin B₁₂ values than those recorded for animals livers in other countries.

The pancreas usually costs about 3 annas per gland and small intestines about 2 annas per yard. The pancreas has, however, not yet been utilized for making insulin, chiefly because of lack of requisite facilities in the slaughter-houses. The gland has to be collected expeditiously from the animal after slaughter, and then quickly frozen.

It was stated by representatives of the firm that the improvements required in the slaughter-houses had been pointed out very well by Dr. B.K. Nandy, and they supported those views.

The firm emphasised the need for the following facilities to be made available for the preparation of biological products.

- (1) Good sanitary and general hygienic arrangements in the slaughter-house and for the slaughtering practices.
- (2) Rigid ante-mortem and post-mortem.

- (3) Cold storage facilities at slaughter-houses including quick-freeze arrangements for pancreas etc.
- (4) Refrigerated transport facilities in the railways.

Provision of such facilities would naturally increase the cost of production, but it would ensure the quality of the products and prevent spoilage of the glands.

The Zandu Pharmaceutical works also make liver extract.

(iii) Report on Mysore Industrial Testing Laboratory, Bangalore
(Visited on 24.7.56.)

This laboratory manufactures liver extract, both oral and injectible, from sheep livers obtained from Madras. The authorities of this concern are extremely keen to start manufacture of other glandular products, but they are handicapped on account of the absence of a dependable supply of raw material from the slaughter-house. Dr. Sivaram promised to send a note containing his suggestions regarding utilization of glands and organs for the manufacture of pharmaceutical products.



APPENDIX VII

LIST OF PERSONS INTERVIEWED AT DIFFERENT PLACES

<i>S. No.</i>	<i>Place</i>	<i>Date</i>	<i>Persons interviewed</i>
1.	Calcutta	15.7.55	Shri M.R. Sen, Superintendent, Tangra Slaughter-house, Calcutta.
2.	-do-	-do-	Shri B.P. Basu, Assistant Secretary, Local Self-Government, West Bengal, Calcutta.
3.	-do-	-do-	Shri M. Bannerjee, Superintendent, Bengal Tanning Institute, Calcutta.
4.	-do-	-do-	Dr. S.K. Chatterjee, Deputy Director, Health Services, West Bengal, Calcutta.
5.	-do-	-do-	Shri A. Mukerjee, Health Officer, Calcutta Corporation, Calcutta.
6.	-do-	-do-	Mr. Fontana of M/s A.D. Mayer and Co. Calcutta.
7.	Delhi	16.4.56	Shri R.N. Goyle of M/s Essex Farms Ltd. New Delhi.
8.	-do-	-do-	Dr. M.L. Passi, Medical Officer of Health, Municipal Committee, Delhi.
9.	Poona	8.6.56	Dr. C.M. Dighe, Medical Officer of Health, Poona Corporation, Poona.
10.	-do-	-do-	Shri M.U. Khan, Superintendent of Slaughter-house, Poona Corporation, Poona.
11.	-do-	-do-	Dr. T.B. Patel, Director of Public Health, Bombay State, Poona.

<i>S. No.</i>	<i>Place</i>	<i>Date</i>	<i>Persons interviewed</i>
12.	Poona	8-6-56	Shri S.E. Wadia, Public Health Engineer, Bombay State, Poona, Cantonment Board, Poona.
13.	-do-	-do-	Shri A.M. Mansabdar, Superintendent of Markets and Veterinary Inspector, Cantonment Board, Poona.
14.	-do-	-do-	Dr. (Mrs) S.V. Tilak, Hon. Secretary, S.P.C.A. , Poona.
15.	-do-	-do-	Br. F.G. Vinze, Joint Secretary S.P.C.A. , Poona.
16.	Bombay	9.6.56	Representative of M/s H.M. Yamin & Co., Moradabad (Uttar Pradesh).
17.	-do-	-do-	Representative of M/s Abdul Rahim Ajaz Hussain, Delhi.
18.	-do-	-do-	Representative of M. Abdul Majid Qureshi, Raipur, U.P.
19.	-do-	-do-	Shri Lekhan Paul, President, All-India Gut Exporters, and Manufacturers' Association, Moradabad.
20.	-do-	11.6.56	Shri P.R. Nayak, Municipal Commissioner, Bombay.
21.	-do-	-do-	Shri V.G. Sankhambar for Superintendent of Markets, Bombay.
22.	-do-	-do-	Dr. V.V. Puri, Executive Health Officer, Bombay.
23.	-do-	-do-	Shri S.A. Malandkar, Chief Inspector of Markets, Bombay.
24.	-do-	-do-	Shri G.H. Joshi, Officer-in-charge, Bandra Slaughter-house, Bombay.
25.	-do-	-do-	Shri F.S. Khambata, Principal, Bombay Veterinary College, Bombay.

<i>S. No.</i>	<i>Place.</i>	<i>Date.</i>	<i>Persons Interviewed</i>
26.	Bombay	118-6-56	Shri N.N. Ophal, Tanning expert and Superintendent of Tanning Institute, Bombay.
27.	-do-	-do-	Shri V.B. Patel, Drug Controller, Bombay State, Bombay.
28.	-do-	-do-	Lt. Col. J.D. Kothawala, S.P.C.A., Bombay.
29.	-do-	-do-	Shri P.B. Advani, (Of All-India Manufacturers Association), Marine Drive, Bombay.
30.	-do-	-do-	Shri D.M. Mehta, Secretary, S.P.C.A., Bombay.
31.	-do-	-do-	Shri K.A. Hamid, All-India Manufacturers' Organisation, Bombay.
32.	-do-	-do-	G.R. Dholakia, 'Alembic', Bombay.
33.	-do-	-do-	Shri Fontana, C/o; M/a A.D. Meyer and Co.
34.	-do-	-do-	Dr. B.K. Nandi, Teddington Chemical Factory Ltd., Andheri, Bombay.
35.	-do-	-do-	Shri P.L. Baduni, 'All-India Manufacturers' Organisation, Bombay.
36.	-do-	-do-	Shri G.B. Ramalanma, Raptakos, Brett and Co., Bombay.
37.	-do-	-do-	Shri S.P. Pandit, Western India Tanneries, Ltd., Dharavi, Bombay.
38.	-do-	-do-	Shri G.P. Nair, Bombay Drug House, Bombay.
39.	Ahmedabad	12-6-56	Shri M.D. Rajhae, Municipal Commissioner, Ahmedabad.
40.	-do-	-do-	Shri P.R. Chauhan, Deputy Municipal Commissioner, Ahmedabad.
41.	-do-	-do-	Dr. S.G. Desai, Superintendent, Slaughter-house, Ahmedabad.

<i>S. No.</i>	<i>Place.</i>	<i>Date</i>	<i>Persons interviewed</i>
42.	Ahmedabad	12.6.56	Shri V.K. Kantgud, Veterinary Officer, Ahmedabad.
43.	Hyderabad	22.7.56	Shri P. Tirumala Rao, Biological Products, (Private) Ltd., Hyderabad.
44.	-do-	-do-	Shri L.N. Ram, Biological Products, (Private) Ltd., Hyderabad.
45.	-do-	-do-	Dr. M. Ghousiuddin, Medical Officer of Health, Secundrabad.
46.	-do-	-do-	Dr. C.R. Naidu, Medical Officer of Health, Municipal Corporation, Hyderabad.
47.	-do-	-do-	Shri K.S. Shetty, Director of Veterinary Service, Hyderabad.
48.	-do-	-do-	Shri K.J. Devadanam, Deputy Director, Veterinary Department, Hyderabad.
49.	-do-	-do-	Shri B.R. Shetty, Shetty Pharmaceuticals, Hyderabad.
50.	Bangalore	24.7.56	Shri Chennaru Driah, Corporation Commissioner, Bangalore.
51.	-do-	-do-	Mrs. Grace Tucker, Deputy Mayor, Bangalore.
52.	-do-	-do-	Mrs. Rukaniamma, Chairman, Town Planning and Improvement, Bangalore.
53.	-do-	-do-	Shri S.R. Bhombore, Health Officer, Bangalore.
54.	-do-	-do-	Shri M.H. Manchigab, Corporation Engineer, Bangalore.
55.	-do-	-do-	Dr. M. Sivaraman, Director, Industrial Testing Laboratory, Bangalore.
56.	-do-	-do-	Dr. Vasudeva Mindaliav, Asstt. Director, Animal Husbandry Department, Bangalore.

<i>S. No.</i>	<i>Place</i>	<i>Date</i>	<i>Persons interviewed.</i>
57.	Bangalore	24-7-56	Dr. Sakharam Rao, Veterinary Inspector (Civil Area), Bangalore.
58.	-do-	-do-	Dr. Pillai, Veterinary Inspector, (Civil Area), Bangalore.
59.	Madras	26-7-56	Shri D. Balasundaran, Corporation Commissioner, Madras.
60.	-do-	-do-	Shri K.V. Radhakrishna, Deputy Secretary, Health, Education and L.A. Department, Madras.
61.	-do-	-do-	Shri D. Pattabiraman, Director of Animal Husbandry, Madras.
62.	-do-	-do-	Shri C.I. John, Superintendent of Slaughter-houses, Madras.
63.	-do-	-do-	Shri E. ThulasiRamsingh, Veterinary Officer, Corporation of Madras.
64.	-do-	-do-	Shri Venkoba Rao, Assistant Director, Public Health, Madras.
65.	-do-	-do-	Shri A. Ranganathan, Health Officer, Corporation of Madras.
66.	-do-	-do-	Shri P. M. Balasubramanian, Hon. Secretary, S.P.C.A., Madras.
67.	-do-	-do-	Shri S. Govindarajan, Director, King Institute Guindy, Madras.
68.	-do-	-do-	Dr. Vasudeva Rao, Chief of Development Council for Pharmaceuticals and Drugs, Government of Madras, Madras.
69.	-do-	-do-	Shri L.S.P. Saratay, Mitra (T.C.F.), Madras.
70.	-do-	-do-	Shri J. Sivanandam, Inspector of Local Boards and Municipal Councils, Madras.
71.	-do-	-do-	Shri P.S. Natesan, Assistant Drugs Controller, Madras.

<i>S. No.</i>	<i>Place</i>	<i>Date</i>	<i>Persons interviewed.</i>
72.	Madras	26-7-56	Shri I.D. Mantramurti, Deputy Director of Animal Husbandry, Madras.
73.	-do-	-do-	Shri Venkatapati Naidu, Prop. Appah and Co. Madras.
74.	-do-	-do-	A.N. Lazarus, Spencer and Co., Madras.
75.	-do-	-do-	Shri D.N. Natrajan, Chief Chemist, Mount Mettur Pharmaceuticals Ltd., Madras.
76.	-do-	-do-	Shri F.D. Wilson, Madras Veterinary College, Madras.
77.	-do-	-do-	Shri Berti A.D.D. Souza, Principal, Veterinary College, Madras.
78.	-do-	-do-	Dr. Y. Nayudamma, Asstt. Director, Central Leather Research Institute, Madras.
79.	-do-	-do-	Shri C.T.V. Tilak, I.C.I. (India) Ltd., Madras.
80.	-do-	-do-	Shri R.W. Thiagarajan, Parry and Co., Ltd., Madras.
81.	-do-	-do-	Shri L.M. Ghulam Ahmed Parry and Co., Ltd., Madras.
82.	-do-	-do-	Shri G. Rajavelu, Assistant Director of Information and Publicity, Madras.
83.	-do-	-do-	Shri T. Vina Vakamudaliar, Editor, Indian Veterinary Journal, Madras.
84.	Lucknow	27-5-57	Dr. B. Mukerjee, Director, Central Drug Research Institute, Lucknow.
85.	-do-	-do-	Shri S.A.A. Razvi, Deputy Secretary, Local Self Government, U.P., Lucknow.
86.	-do-	-do-	Shri P.G. Pande, Director of Animal Husbandry, U.P.
87.	-do-	-do-	Shri G.C. Juneja, Joint Director of Animal Husbandry (Planning), U.P.

<i>S. No.</i>	<i>Place</i>	<i>Date</i>	<i>Persons interviewed.</i>
88.	Lucknow	27-5-57	Dr. S.N. Rastogi, Medical Officer of Health, Municipal Board, Lucknow.
89.	-do-	-do-	Shri A.K. Roy, Veterinary Assistant Surgeon, Lucknow.
90.	-do-	-do-	Shri R.K. Shukla, V. & P.O. Safeabadi, Distt. Barabanki.
91.	-do-	-do-	Shri M.I. Qureshi, Hide Merchant, Lucknow.
92.	-do-	-do-	Hafiz Abdul Wahad, Sadar Bazar, Lucknow.
93.	-do-	-do-	Shri Raja Pehalwan, Butcher, Lucknow.
94.	-do-	-do-	Shri Mohammed Umar, Hide Merchant, Lucknow.
95.	-do-	-do-	Shri Abdul Razaq and party, Hide Merchants, Lucknow.
96.	-do-	-do-	Shri Kallu, Hide Merchant, Lucknow.
/			
97.	-do-	-do-	Shri Salahuddin, New Road, Kanpur.
98.	-do-	-do-	Shri D. Siddiq and party, Kanpur.
99.	-do-	-do-	Shri Ghulam Rasul, Kanpur.
100.	-do-	-do-	Haji Munnawar Ali, Hide Merchant, Lucknow.
101	Bareilly	29-5-57	Shri J.S. Agarwal, M.L.A., Bareilly.
102.	-do-	-do-	Shri R.S. Khanna, Chairman, Municipal Board, Bareilly.
103.	-do-	-do-	Shri Hameed Raza Khan, Chairman Town Area Committee, Shahi (Bareilly).
104.	-do-	-do-	Dr. G.P.C. Lal, District Medical Officer of Health, Bareilly.
105.	-do-	-do-	Dr. H.C. Rai, Medical Officer of Health, Bareilly.
106.	-do-	-do-	Shri Darbari Lal, Chairman, District Board, Bareilly.
107.	-do-	-do-	Shri S.A. Miqtadiar, S.D.M., Baheri.

<i>S. No.</i>	<i>Place</i>	<i>Date</i>	<i>Persons interviewed.</i>
108.	Bareilly	29-5-57	Shri Roshan Lal Khandelwal, President, Gaushala Society, Bareilly.
109.	-do-	-do-	Shri S.M. Gupta, Secretary, Gaushala Society, Bareilly.
110.	-do-	-do-	Haji Maseet Ullah (large animal gut dealer), Bareilly.
111.	-do-	-do-	Shri Azmat Ullah, Azam Nagar, Bareilly.
112.	-do-	-do-	Shri Abul Majid, Chairman, Town Area, Richa (Bareilly).
113.	-do-	-do-	Dr. Ram Ballabh, Allamgiri Gunj, Bareilly.
114.	Moradabad	-do-	Shri A.P. Jain, Additional District Magistrate, Moradabad.
115.	-do-	-do-	Shri Ranjit Singh, City Magistrate, Moradabad.
116.	-do-	-do-	Shri M.P. Gautam, District Planning Officer, Moradabad.
117.	-do-	-do	Shri M. Yasin, President, (Amroha District).
118.	-do-	-do-	Shri Khaman Singh, M.L.A., Moradabad.
119.	-do-	-do-	Dr. R.S. Bhatnagar, Assistant Medical Officer of Health, Moradabad.
120.	-do-	-do-	Shri Muni Dev, President, District Board.
121.	-do-	-do-	Shri Hirdai Narain, Secretary, Shri Ram Ganga Gaushala, Moradabad.
122.	-do-	-do-	Shri Pooran Prasad Bhatnagar, C/o; M/s Lakhan Paul and Co., Moradabad.
123.	-do-	-do-	Shri Abdul Hamid, C/o Alfred Boots, Moradabad.
124.	-do-	-do-	Dr. K.S. Pradhan, Medical Officer of Health.

APPENDIX VIII

EVIDENCES RECORDED AT VARIOUS PLACES

(i) Evidence recorded at Delhi

The Committee interviewed *Dr. M. L. Passi*, Medical Officer of Health Delhi, Municipal Committee, who briefly related the present conditions under which slaughtering was conducted in the five slaughter-houses of the State for buffaloes, pigs, sheep and goats. Dr. Passi admitted that under the existing conditions the ante-and post-mortem examination was not as thorough as it should be. He also explained the difficulties which the Municipality was experiencing in procuring the services of qualified veterinary surgeons. He put in a strong plea for shifting the slaughter-house to a new site and informed that the Delhi Municipality had already sought the help of the State Government for necessary financial and other help in the matter. Dr. Passi specially emphasized the advisability of earmarking a suitable site immediately, otherwise he feared that with the rapid expansion of residential colonies on all sides of the city it would not be possible later to obtain any suitable site at a convenient distance from the town.

(ii) Evidences recorded at Poona

Dr. C. M. Dighe, Medical Officer of health, Poona Corporation, said that there was only one slaughter-house in Poona with separate blocks for (a) cattle and buffaloes and (b) sheep and goats. Pigs were slaughtered in privately-owned licensed premises. Only six licenses for slaughter of pigs had been issued. About 6 to 7 cattle, mostly buffaloes, but sometimes oxen and bullocks, were slaughtered daily. No cow had been slaughtered since 1934. Only 5 to 6 pigs were slaughtered as there was not much demand for pork. About 150 goats and 150 sheep were slaughtered every day, but this number went up to 900 on holidays and festivals. No inspection of pigs and pig meat was done. Ante-and post-mortem examination of sheep and goats was carried out in the slaughter-house, and for this purpose there was one veterinary surgeon appointed by the Municipality. A Government officer inspected the cattle only with a view to seeing that Government rules and regulations about slaughter of prohibited types of cattle were not contravened. Sheep and goats were received in the lairage by 8 P. M. and slaughtering starts at 4 A.M. or 1 A.M. if the number was very large as on festival days. It took about three hours from 4 A.M. to 7 A.M. by the Municipal meat inspector to carry out inspection, but on holidays and special festivals he had to start inspection at about 1 A.M. in the morning and continue up to 7 A.M. After examination the animals were passed on to the slaughter-house and sick animals were rejected. Cattle were slaughtered from 3 to 5 in the afternoon. No arrangement existed for post-mortem examination and the carcases were not examined carefully at all.

The blood was the property of the Municipality and it was sold to the contractors by the Municipality. As regards glands and liver they

were the property of the butchers. He had no definite information about the utilization of these.

Sheep and goats were rejected at the ante-mortem examination. As regards post-mortem examination, there was not a single case on record where a carcase had been condemned. If the animal was emaciated, passing loose stools or there was sickness such as pneumonia, the animal was rejected.

Slaughter-house had three blocks at a distance from each other, two meant for sheep and goats and one for cattle. The slaughter-house for sheep and goats was crow-proof but not fly-proof. One sheep and goat slaughter-house belonged to Cantonment Board and the other to Municipal Corporation,

Some additions or alterations were contemplated to be made such as improvement of walls and floors and making the blocks fly-proof. At present there was no proper boundary wall, which he would like to be constructed. He said that as an experimental measure they would try the stunning method. There would be opposition from Muslims on religious grounds but other communities might accept that method. By a resolution of the Municipal Committee the slaughter of cows had been prohibited since 1934. Very few bullocks were slaughtered. Mostly buffaloes were slaughtered.

The Government Inspector issued a certificate to effect that the animal was fit for slaughter, and unless such a certificate was produced before the Veterinary Superintendent, the animal was not allowed to be slaughtered. The 'Mukaddam' of the Municipality verified and collected the certificates.

(*Shri M. U. Khan*, Veterinary Superintendent, said that there were 25 to 30 flayers who were the employees of the butchers. The mullanies (slaughtering butchers) were the employees of the Municipality. The butchers were licensed, but not the flayers. Twenty to fifty persons earned their livelihood by transporting meat etc. Fifty to sixty persons were engaged in the Blood Boiling Factory. The building of the slaughter-house was constructed in 1948).

There was no examination of pig slaughter. No sheep and goats were slaughtered privately, but licences were given for private slaughter on festivals, etc. If any animal was slaughtered privately the information regarding this reached the Corporation authorities through the neighbouring public. In Bombay State there was an Act providing that no animal could be slaughtered except in a recognised slaughter-house. On religious grounds the Municipality issued the licence for slaughter of animals in a private house but there was nobody present at the time of slaughter. They were successful up to 99 per cent for prohibiting the private slaughter of sheep and goats, but he could not say regarding slaughter of cattle. On 'Id' days the slaughter was done in the private houses and permits were issued for such purposes. Dr. T. B. Patel, Director of Public Health, Bombay State, Poona said that they had got the supervising staff of Assistant Directors as well as District Health Officers and, in addition, municipalities had certain staff of qualified sanitary inspectors. The

municipal staff was not under the control of the Government. The officers of the Health Department visited the municipal areas and the slaughter-houses. The slaughter-house was the responsibility of the local health authorities. From the sanitary point of view, there was much to be done. There was also much to be done for the construction of satisfactory slaughter-houses in different cities. The condition of all the slaughter-houses in the State could not be said to be satisfactory.

Encouragement was promised to be given to the municipalities for the construction of new type of slaughter-houses. In the Second Five Year Plan provision existed for Rs. 5 lakhs for the improvement of slaughter-houses in the Bombay State. That would be given as loan to the local-bodies. There has not been the expected response to the loans offered. As far as the slaughter-houses were concerned, the administration as run by the local authorities. Naturally that administration could not be as efficient as that of Government because of political considerations. The provision made in the plan would not go far as it would not cover supervisory aspect. Sanitary inspectors were being given training in meat inspection. Local bodies, except corporations, could not maintain veterinarians on financial grounds. To employ veterinarians for meat inspection would be ideal, but that was not possible for all the local bodies. For this purpose more intensive training in meat inspection might be given to the sanitary inspectors.

Shri S.R. Patel, Director of Veterinary Services, Bombay State informed that the Government had decided to start a course at Bombay Veterinary College for training in meat inspection. This course was meant for sanitary inspectors as well as veterinarians. The response from local bodies had not been encouraging. It was however, likely that the course might start in next July. Part-time veterinarians were being employed by some local bodies.

Dr. Patel said that the supervising staff of the Health Department, went twice a year to a municipal corporation for inspection. Effective supervision could improve to some extent the conditions of slaughter-houses. The plans of slaughter-houses were referred to the Health Department for examination and initiative was also taken by the Health Department itself on this behalf.

The number of buffaloes to be slaughtered was restricted and some quota had been fixed for every slaughter-house. Male buffaloes were exempted from this restrictions.

Shri S.E. Wadia, Public Health Engineer, Bombay State, Poona, said that no slaughter-house in the State come up to the desired standard, but the Poona slaughter-house could be considered the best of all in the State. The site and lay-out of the slaughter-house would continue to be ideal even when the rise of population and the expansion of the city took place with the progress of time. Sufficient high land was available for expanding the slaughter-house. Arrangements for the cold storage in the slaughter-houses were not insisted upon by the Health Department. He added that 6,000 cubic feet of cold storage in the cantonment board market cost Rs. 1,25,000, built 8 years ago and supplied to the Committee type plans for model slaughter-houses for municipalities of different sizes.

Shri A.M. Mansabadar, Superintendent of Markets, Cantonment Board, Poona, said that the Cantonment Board had a separate slaughter-house for cattle, sheep and goats. Cattle included buffaloes as well as bullocks. The sheep and goat slaughter-house was fly-proof but not cattle slaughter-house.

The livers were collected by a contractor, who stored them in an ice-box and transported them to Bombay for supplying to Raptakos, Brett and Co. The glands were collected at 6 O' clock in the morning.

The cold storage plant in the Cantonment Board market was put up by a businessman from the business point of view. It was being utilized for keeping meat, fish, eggs, etc. That was purely a private concern. Ante-and post-mortem examination were properly carried out. The blood was also taken away by the contractor and was utilized for making manure after damping in lime.

Dr. (Mrs.) S V. Tilak, Honorary Secretary, SPCA, Poona, spoke from the humanitarian point of view as to how the slaughter of animals should be done. The method at present employed was not humane. The method of slaughtering animal must be painless. She felt that before the animal was slaughtered, it should be made senseless by some scientific treatment. It was very important that the animal to be slaughtered should not see the process of slaughtering. Usually the animals were made to walk from 15 to 20 miles before they reached the destination for slaughter and if the animal became sick it was left there by itself. The animals should not made to walk for 10 to 20 miles. They could have certain centres as in England where the animals could be collected at first. Later on, the animals could be transported to the slaughter-houses from those centres. Moreover, the animals were not properly fed before slaughtering. There should be proper arrangements for feeding the animals before slaughter.

(iii) **Evidences Recorded at Bombay**

The Committee interviewed representatives of the following firms.

- (1) M/s H. Mohd Yamin, Moradabad, U.P.
- (2) M/s M. Abdul Rahim Ajaz Hussain, Delhi.
- (3) M/s M. Abdul Majid Qureshi, Rampur, U.P.

(4) M/s M.N. Lakhan Pal & Co., Moradabad, represented by Shri Lakhan Pal, who is also the President of the All-India Guts Exporters and Manufacturers Association, P.B. No. 68 Moradabad.

It was learnt that the manufacturers were exporting casings to Denmark, Hamburg, Norway, Sweden, Spain, etc., but not to U.K. and U.S.A. For various reasons they were eager to build up trade with U.K. especially because trade relations with U.K. were facilitated by credit, etc. which helped good monetary rolling. In the case of exports to Hamburg, for instance, the casings often remained unsold for several months until they could fetch a satisfactory price and the money got locked up. The representatives of the firms desired that methods

should be developed and facilities made available accordingly for preservation of guts in the rural areas between the time of their collection and that of their despatch to the collecting centres in towns. They were also eager to do everything possible to improve their products so that they might fetch good prices, and they said they would accordingly accept any conditions and regulations which the Government might prescribe for the benefit of this industry. They were also eager to take up the manufacture of sterilized surgical gut, but they desired that the Government should provide an expert who should give them proper guidance in the technique.

It was learnt from the representatives that places like Amritsar and Ludhiana in the Punjab were also fairly well-organised gut-manufacturing centres, and that all those guts were collected in Delhi from where they were exported either direct by air or through Bombay by ship. In Delhi, sheep and goat casings were manufactured. Kashmir goat casings were said to be of very good quality and fetching good price; these were exported mainly to Switzerland in the salted state.

Sir P. R. Nayak, Municipal Commissioner, Bombay, informed that the Bandra-slaughter-house, which was built in 1867, was now nearly 90 years old and that it had grown its capacity by seven or eight times and was in a very unsatisfactory state. Inadequacy of finance had hampered major improvements and the implementation of the proposals to shift it to a new site at Deonar in Thana district. The estimated cost of a new slaughter-house at Deonar was about rupees one crore. The Central as well as the State Governments had been approached for financial assistance, but the proposal had not made headway. Consequently it had been decided to effect certain improvements at Bandra itself, and a sum of Rs. 40,000 had been provided for minor repairs in the current year. Some steps had already been taken towards improving the Bandra slaughter-house. Walls etc. had also been put up to prevent the animals awaiting slaughter from viewing the process of slaughter.

Complete modernisation at the present site was estimated to cost about Rs. 40 lakhs, but the opposition to the continuance of the slaughter-house at Bandra was very strong and well founded. The aerodrome authorities were also insisting that, in spite of all the improvements at the present site, the danger arising out of vultures could not be completely eliminated. Moreover, the present site was contiguous to residential quarters. The Corporation had, therefore, decided to shift the slaughter-house to a new site. Plans were being considered for the modern slaughter-house and a request would be made to the Government of India for obtaining an expert for this purpose. Certain firms had offered to act as consultants. The Corporation was eager to make the new slaughter house ready within the next three or four years. The new project would also provide housing etc. for the workers on the spot. The method of slaughtering was also under consideration. This was important because it might affect the design of the slaughter-house. Some British firm (North British Lifting and Moving Appliances Ltd.) had constructed a modern slaughter-house in Turkey, which was claimed to comply with the religious sentiments of the Muslims and yet provide facilities for humane slaughtering techniques. The new slaughter-house should be

a composite one for all species and it should serve as the Central Slaughter-house in place of a number of slaughter-houses existing at present, all of which were unsatisfactorily located and should be closed down. The aim would also be to facilitate the maximum recovery of the by-products and also the effective collection and utilization of glands etc. for the pharmaceutical industry.

The area selected at Deonar was a fairly large one. Here, 113 acres had been earmarked for the slaughter-house. This was formerly a low-lying area but had been filled up gradually and raised to the surrounding level. It was also proposed to shift the tanneries and other ancillary industries of the slaughter-house to Deonar. The new site would be about 11 miles from Crawford market to the east beyond Chemur. (Bandra is about 8 miles from Crawford market). There was also a railway siding on the spot. There would be no difficulty in providing water supply, drainage, communications, and other amenities at Deonar.

With regard to full utilization of glands, without the butchers putting up the prices to unreasonably high levels with rising demands. Shri Nayak felt that it should not be difficult to make necessary safeguards, perhaps by incorporating a condition in the licence issued to the butchers that the Corporation might at any time take over any part of an animal at such price as may be fixed by the Corporation from time to time. At any rate, Shri Nayak did not envisage any serious difficulty in this respect.

The area of Greater Bombay today was 92 sq. miles. The old city was 27 sq. miles. There were only about 1500-2000 animals felt in the old city, but in Greater Bombay there were probably many more than twenty thousand animals. Much illicit slaughter went on in the old city, and slaughter also went on outside the city in scattered areas. Two check-posts had been proposed, at Sion and Mahim, for preventing ingress of animals for illicit slaughter.

Shri Nayak was of the opinion that the ban on slaughter of cows would not materially affect the construction of the new slaughter-house.

Shri F.S. Khambata, Principal, Bombay Veterinary College informed that certificates were issued in the forms prescribed by the importing countries. The Committee felt that the manner in which certificates were being issued at the moment was not entirely satisfactory and that the matter needed some further investigation.

Shri N.N. Guha, Tanning Expert and Superintendent of Tanneries, Khar, Bombay, said that hides were generally defective. He recommended that the forward contract system should be stopped; flayers should be licensed; flaying techniques should be given proper training. He said that at present the damage due to defective flaying was easily 20-25 per cent. of the cost of hides.

Dr. V.V. Puri, Executive Health Officer, Bombay, said that he was concerned with the sanitation and inspection of the markets. He had never encountered any unwholesome meat in the market.

Shri V. B. Patel, Drugs Controller, Bombay State, said that the question of disposal of glands etc. was discussed at a conference convened by the Bombay Government. He further said that today the livers were the property of the butchers. The manufacturers resented it and wanted that there must be some method whereby the manufacturers could get the glands at a reasonable rate and that rate should be stationary or fixed for a certain period. The manufacturers said that the rate should be fixed for good as that would give them chance for planning their manufacture. Therefore, it was suggested that there should be a cooperative board consisting of representatives of butchers, government, municipality, and pharmaceutical manufacturers, which should go into this question and fix the prices from time to time. It was stressed that for this purpose legislation for granting the powers to the municipal corporation to dispose of glands etc. might be necessary.

Col. J. D. Kothawala, who represented the SPCA and also the All-India Manufacturers Organisation, and Mr. D. M. Mehta, Secretary, SPCA emphasised that all possible cruelty to animals should be avoided at any cost. They also desired that top priority should be given to suitable arrangements being made for looking into and properly supervising the handling, slaughtering, watering etc. of animals.

Mr. P. B. Advani, who was formerly the Director of Industries, emphasised the need for making available properly trained flayers, so that the value of hides did not depreciate due to defects caused by improper flaying. He further said that since a good proportion of hides came from villages, skilled flayers should also be made available in rural areas. He also desired that suitable arrangements should be made for the proper utilization of blood, etc.

Dr. K. A. Hamid, who represented the All-India Manufacturers Organisation, recalled the recommendations of the Sokhey Committee, and said that improvement and modernization of slaughter-houses was absolutely necessary, apart from the requirements of the pharmaceutical industry. As regards utilization of glands etc., he said that the number of large animals slaughtered was gradually decreasing owing to the ban on slaughter of useful cattle. Glands of smaller animals gave lower yields and were thereby uneconomical, though it was not definitely known whether there was any difference in quality. For economical manufacture of insulin, at least 1,000 lb. of pancreas would be required daily. In this gland, autolysis set in quickly, within half an hour of death, so that it must be put in acetone or frozen immediately. Dr. Hamid informed that frozen pancreas were being supplied to different countries by South America for the manufacture of insulin.

Dr. B. K. Nandi of Teddington Chemical Factory, Andheri, and representatives of other firms said that the glands etc. usually required by pharmaceutical firms were liver, pituitary, pancreas, bile, pig stomach (for the intrinsic factor) and blood. Thyroid was not necessary because of synthetic thyroxine being available, though certain doctors preferred to prescribe thyroid gland powder. For these glands it was necessary that within half an hour of slaughter they should be preserved either chemically, in cold-storage, or by quick freezing (for pancreas and

pituitary). For collection of blood for protein agglutinates, hydrolysed fibrin, haemoglobin etc., suitable blood-drainage channels should be provided in the slaughter-house.

To avoid delay in the transport of organs from outside, the timings of slaughter might be adjusted to coincide the train timings, but on the whole perhaps cold storage facilities in the slaughter-house supplying livers would be the best solution. The ante-and post-mortem examinations should be made rigid.

Dr. B. V. Patel, Drugs Controller for Bombay State, informed that on 23rd June, 1955, the Government of Bombay had held a conference which recommended that :-

- (1) Bandra slaughter-house should be abolished,
- (2) The question of establishing a new modern slaughter-house at Deonar in Thana District should be thoroughly investigated and the matter expedited,
- (3) A separate board should be constituted consisting of corporation officials, butchers' representatives, and representative of manufacturing concerns, for regulating the prices, supply etc. of glands and organs

Mr. Fontana of A. D. Mayer & Sons informed that besides animals casings the firm was also manufacturing raw gut (sheep and goat guts). These were being dried and polished in Bombay and exported to Europe (Specially Germany) for sterilization and marketing. It was generally felt by those present that it might be possible to do the sterilization also in this country.

(iv) Evidences Records at Ahmedabad

The Municipal Commissioner, *Shri M. D. Rajre*, informed that population of Ahmedabad was nearly 9 lakhs. The present slaughter-house was admittedly unsatisfactory and that it was located in a residential area in the heart of the town. It was proposed to shift it to a new site and the proposal had been accepted in principle. A tentative site had also been selected, providing an area of nearly 5 acres which the Committee felt was rather small). Municipal transport carried meat from the slaughter-house to the market. It was also intended to shift the tanneries and other ancillary trades to the new site. The butchers of Ahmedabad had formed an organisation of their own, called the 'Qureshi Jamat'. It would not be necessary to rehabilitate butchers on the new site because they had their own houses. A new cattle market would also be located about 2 furlongs from the new slaughter-house. The butchers had a yard of their own, where they kept the purchased animals for some days before the slaughter. He did not know if any firms were purchasing liver or other glands from the slaughter-house, but some time ago Sarabhai Chemical Work Ltd., Baroda used to collect livers etc., but later gave it up probably because they found it uneconomical. Blood was taken to be the property of the Municipality, though this matter was under dispute as in Bombay. It was collected by a contractor who processed it and sold it as manure.

A new meat and fish market, provided with cold-storage, had also been planned. Besides, a large central market, with a corner for meat and fish was also proposed. A good deal of illicit slaughter went on inspite of all precautions. The army had a small slaughter-house of its own.

No ante or post-mortem examination was done. However, every individual who worked inside the slaughter-house had to take a license from the Municipality, which was the same for butchers, flayers, assistants, etc. The common method of slaughter was 'halal'. Provision for 'jhatka' and Jewish methods also existed in the same slaughter-house, but these were practically negligible. There were no private slaughter-houses and no licence was given for private slaughter even on festivals on any premises outside the slaughter-house. Small animals were slaughtered every day, but large animals only six days in a week. The quota for Ahmedabad was 100 she-buffaloes (no limits fixed for he-buffaloes) and 225 bullocks, cows etc. per week (slaughtering 6 days in a week only). There were no limits fixed for slaughter of sheep and goats.

(v) Evidences Recorded at Hyderabad.

The following local officials and representatives of pharmaceutical concerns were present :-

- (1) Shri P. Tirumala Rao, Biological Products (Private Ltd.,) Hyderabad.
- (2) Shri L.N. Rau, Biological Products (Private Ltd.,) Hyderabad.
- (3) Dr. M. Ghousuddin, Medical Officer of Health Secunderabad.
- (4) Dr. C.R. Naidu, Medical Officer of Health. Municipal Corporation, Hyderabad.
- (5) Shri K.S. Shetty, Director of Veterinary Services, Hyderabad.
- (6) Shri K.I. Devadanam, Deputy Director, Veterinary Department; Hyderabad.
- (7) Shri B.R. Shetty of Shetty's Pharmaceuticals, Hyderabad.

Dr. C.R. Naidu stated that he had been the Health Officer for 14 years, and that during that time he had put up several proposals for the improvement of the slaughter-houses. There were four slaughter-houses in Hyderabad viz., these were at Ambarpet, Jaguda, Goulipura and Ramnaspura, in the 60 sq. mile area for 10 lakh human population. Ambarpet was meant mainly for slaughter of cattle. There was improper drainage, and water supply was not adequate. All these slaughter-houses were controlled by the Municipality. Since 1950, the slaughter of cattle and buffaloes had gone up because of the rise in price of mutton. The prices of mutton was Rs. 2/- per seer, beef was 8 annas per seer, and buffalo meat prices varied from 4 annas to 6 annas per seer. The quality of animals brought for slaughter was not high, but in certain seasons they were better than in others. The figures for the bovines slaughtered in 1955-56 are :

Cows, 10,030; bullocks and bulls 19,779; buffaloes 4,844; the total being approximately 35,000.

Dr. Naidu informed the Committee that the post of a Veterinary Officer was created in 1950, although previously also there was a Veterinary Officer incharge of Municipal Markets and Slaughter-houses, a post which was terminated in 1946. In 1952 the services of a Veterinary Officer were loaned by the Government, and in 1955 the post had been given to a non-veterinarian from the revenue side. The Hyderabad Slaughter of Animals Act of 1950 was administered by the State Veterinary Department, fees at the rate of 4 annas per animal were collected, and the annual revenue of about Rs. 15 to 16 thousand was received by Government. The corporation was not prepared to reintroduce the appointment of a veterinary officer because of this arrangement. But Meat Inspectors on Rs. 50-70 per month had been employed. These Meat Inspectors had been authorised to bring up cases of illicit slaughter etc. before the Health Officer.

Dr. Naidu recommended that the Veterinary Officer's post should be filled and brought in the Dominion cadre in the Government-sanctioned scale of pay for Veterinary Assistant Surgeon.

All slaughter in the State was carried out in the slaughter-houses. No animals were allowed to be slaughtered in private houses, though no doubt on occasions a few goats or sheep might be slaughtered by individuals; but for this special permit was required. There were no exemptions granted from the operation of the Slaughter Control Act on account of religious festivals. The Slaughter fees were collected according to the following rates :

Sheep and goat, (For Mullah one anna per animal).	one anna six pies per animal.
Cattle	Rs. 1/-.
Buffaloes and Bulls	Rs. 3/8/-.
Camel	Rs. 20/-.
(One or two camels are slaughtered every year.)	

Dr. Naidu also informed that in other slaughter-houses also ante- and post-mortem examinations from the health standpoint were practically non-existent. In fact it was not possible for one Veterinary Officer to look after so many slaughter houses and, therefore the suggestion has been that the number of slaughter-houses could be conveniently reduced and of proper central slaughter-house built up in the State. Dr. Naidu stated that there had been no condemnation of either whole carcases or parts of carcases; in fact, no records had been maintained of any such condemnation.

Guts were taken over from the slaughter-houses by the contractor, who sold them to A.D. Mayor and Co. Blood was taken over by a contractor, dried and exported to other parts of India, notably Bangalore. Livers were mostly utilized locally, though some quantities were also sent to Bombay.

There was a proposal for the meat from the Slaughter-houses to be carried in covered vans. In fact, some covered vans had been purchased but as a result of the opposition from the butchers meat was still carried, in all kinds of vehicles other than covered vans. Hides and skins were

partially processed in Hyderabad and then forwarded to Bangalore, Madras, etc. The administration of slaughter-houses was under the Markets and Slaughter-houses Committee. The Medical Officer, therefore, found it difficult to maintain intimate touch with the working of the slaughter-houses.

There was no pig slaughter-house in the State.

Dr. Mohd. Ghousuddin informed that he had a jurisdiction of 8 to 9 sq. miles, and the human population of Secunderabad was about 1 lakh. The slaughter-houses of Secunderabad were in a better state of maintenance than those in Hyderabad. About 80 to 90 thousand sheep and goats and 3 to 4 thousand cattle were slaughtered every year, and among the cattle there were more bullocks than cows. No buffaloes were slaughtered. They used to have a whole-time officer, but like Hyderabad they had also lost the services of this Officer. There was no veterinary officer at present.

Shri R.N. Rao informed that his firm handled about 700 lb of liver daily. They were using only bovine livers, and they found sheep livers to be costly for the preparation of liver extract.

Shri Shetty of Shetty's Pharmaceutical, informed that his firm was not making any liver extract at present, though it was contemplating to start its manufacture in the near future. He emphasized the following points :-

1. Liver should be available at fixed concessional rates.
2. Quota should be fixed for the different firms.
3. Storage facilities at slaughter-houses should be made available.
4. Refrigerated transport should be arranged by the Municipality.
5. Buyers should have the option for selection and rejection. (Shri Rao informed that even at present the buyers had no difficulty in selecting or rejecting).

(vi) Evidence Recorded at Bangalore

The Committee discussed fully with the local representatives the disadvantages of the present slaughter-houses, and the proposals of setting up a new slaughter-house. The blue-prints of the new slaughter-house, which had been already prepared by the Corporation authorities, were seen by the Committee. A few suggestions were given and minor alterations proposed. The Municipal Corporation was informed that the Committee was considering the advisability of getting an expert on modern slaughter-houses from abroad under F.A.O or T.C.M. Programme etc. It would seem advisable, therefore, for the Corporation to go slow with their building programme and await the expert's advice that may thus become available.

Dr. M. Shivarao, Director, Industrial Testing Laboratory, invited the attention of the Committee to the need for specialised training abroad being secured for promising young technicians in the special line of manufacture of different glandular products and suggested that the Government

of India might obtain the required facilities for such training abroad to some selected men from the pharmaceutical industry. In the discussion that followed it was brought out forcefully that improvements in meat inspections practices would be possible only if the officers concerned were adequately trained in countries where advances had taken place in recent years.

The representatives of the butchers stated that the question of stunning would not be acceptable to them due to religious injunctions. Representatives of the meat trade present during the discussions were asked if they would be willing to allow the collection of the glands which at present were not being utilized and were generally wasted. The Municipal Corporation or the Veterinary Officer incharge of the slaughter-houses could arrange the collection and these, when pooled together, could be drawn upon by the interested manufacturers. The representatives of meat trade were not enthusiastic about the proposed surrender of the glands. After lengthy discussion, however, they agreed to such a proposal and wished that extra money might be paid to the butchers who would actually dissect out the glands. It was also suggested that if the meat trade did not agree to part with the animal glands, the by-laws of the Corporation could be suitably amended to make this possible.

(vii) Evidences collected at Madras

Shri D. Balasundram Commissioner, Corporation Madras, informed the Committee that there were two slaughter-houses in Madras one in Perambur and the other in Saidapet. About 1400 sheep and goats and 70 cattle (including 30 buffaloes) were being slaughtered daily for consumption in the city. The figures relating to cattle included beef exported to Mysore. He personally felt that the present slaughter-house at Perambur, though it was originally away from human habitations, was now very close to human dwellings and should be moved to a far off place having better facilities and lesser traffic. For the present, however, he suggested it might be continued at the present site with necessary additions and alterations because a large sum might be required to move the slaughter-house to some other place. The slaughter-house at Saidapet was far away and had been annexed only recently to the Madras city. About 50 sheep and goats were being slaughtered there daily on an average. Fees for the animals to be slaughtered were levied at annas 5 per sheep or goats ; and Rs. 2 per cattle, and an extra amount of Rs. two and eight annas per carcase was being charged for those sent to Bangalore. The fees were collected by the contractor, to whom a lease for the purpose was given. Rs. 1,20,000 for the lease and another Rs. 3,500 for removal of blood was received by the Corporation this year. Normally, animals were slaughtered in the slaughter-houses only after the Veterinary Officer had certified that they were fit for slaughter for human consumption. Only on occasions of religious festivals, such as Bakra-id and special functions, sheep and goats were permitted to be slaughtered privately (unlicensed places). Cattle even on these occasions, were slaughtered in slaughter-houses only. There were only 3 to 4 applicants for permits for slaughter of cattle on the occasion of Bakra-id and the total of such slaughter would not be more than 100 cattle in a year.

Butchers were licensed. Collection of slaughter fees was auctioned and a contractor collected fees according to the schedule prescribed by the Corporation.

The Commissioner felt that his present veterinary staff was adequate and doing the job efficiently. He, however, assured that the Corporation would be willing to increase the staff and make such other improvements as the Committee might recommend.

In the State of Madras, there was no system of fixing quota for different species in the slaughter-houses, as was done in Bombay. There was no cold storage in the slaughter-house, but a cold store was maintained by the Corporation in Moore Market (which the Committee visited later). Airing of carcasses was not done in Madras.

Large-scale slaughter also took place in Madras, Tiruchinapalli and Coimbatore.

Dr. K. Vasudeva Rao, Retired Director of Medical Service, Madras, informed that a team of Russian experts had visited India some months ago to survey the scope and possibilities of developing the pharmaceutical industry in India so as to make the country self-sufficient in respect of its requirements of various pharmaceuticals—as had been done in Russia within the space of a few years. He further informed that the Government of India were about to send a delegation of Indian experts etc. to Russia and certain other European countries for studying the position there. He wanted the Committee to recommend to the Government that the observations of the Indian delegation should include the subject of gland preparations. Dr. Rao also recalled the recent paper in Readers' Digest on the use of Aureomycin for preservation of meat and suggested that research on similar lines might usefully be taken up in this country. He further remarked that since glands from different types of animals and in different places might vary in the contents of the active principles. Universities may be asked to take up the research and assess the value of the glands according to the breed and strain of animals, environment, fodder etc. Most effective glands could thus be obtained in an economic way.

Dr. Rao suggested that some private firms should come forward to take up the preservation of glands by providing refrigerators in the slaughter-houses by arrangement with the Municipal authorities. It was pointed out to the Committee that transport of livers from Madras to Bombay and back after processing increased the cost of the product. If the complete processing and manufacture could be done at Madras, the cost of liver preparations would be cheaper to consumers in the State. Some drugs that they obtained from the M.S.D. were costlier than those got from private stores. In Dr. Rao's opinion, as Bombay had taken the preparation of sulpha drugs, Madras should take the preparation of glandular products and supply them at a cheaper rate. Regarding slaughter of animals, he suggested injections, which will cause immediate and painless death.

In Dr. Rao's opinion the Madras slaughter-house compared well with others and here every part of the carcase was being utilised, though there was much room for improvement including quick transport, proper storage etc. He said that demand for indigenous glandular preparations would have to be created. He also informed that Japan had started preparing insulin from fish, but no such attempt had been made in India so far. There was need for educative propaganda among the butchers, the firms and the consumers of liver extracts.

Shri D. Balasubramaniam, Commissioner, Corporation, Madras, wanted that cruelty in slaughtering be brought to the very minimum and that animals should be transported by lorries with the provision of sufficient fodder, water etc., and not walked over distances of 50-60 miles as at present. In reply to a query he informed that S.P.C.A. officials did not go inside the slaughter-house premises.

Dr. S. Govindarajan, Director, King Institute, Guindy, Madras-15 referred to an instance reported in the Lancet where bones received from India for fertilizer purposes had caused disease among human beings. He wanted that all bones exported from India should be checked bacteriologically before export. He recommended that the system of setting up slaughter-houses purchasing their own animals and selling to retailers by the Government or Corporation might be tried in India.

Dr. Naidu stressed the need for establishing institutes for preparing glandular products in hilly areas to avoid heat and fly trouble and said that a place like Yercaud would be ideal for the location of plants for the manufacture of such products. The model design of slaughter-houses circulated by the Government of India, he said, was under consideration of the State Government, but it was costly. The manufacture of glandular products on some sort of cooperative basis between the different institutions would certainly be to the best advantage.

Shri Pattabiraman, Director of Animal Husbandry, Madras, informed that there were about 155 licensed slaughter-houses in the State. The ante-mortem and post-mortem examination by veterinarians was being done in only 8 or so of these. In many others (about 89) departmental Veterinary Assistant Surgeons were working part-time and they were paid Rs. 15 for this additional work. In the remaining slaughter-houses only sanitary inspectors and others were doing the work. Of the 61 Municipalities in the State, 30 had *pucca* slaughter-houses, 3 had licensed private slaughter-houses and the remaining 28 had no slaughter-houses at all. *Shri Pattabiraman* recommended compulsory examination by veterinarians in all the slaughter-houses and he suggested that the Local Boards should be induced to set up *pucca* sanitary slaughter-houses. The revenue derived from slaughter-houses, he said, should be utilized for improvement of slaughter-houses and of livestock. He informed that training was being given to butchers as well as Veterinary Assistant Surgeons in skinning at the Madras Veterinary College. At about 6 mofussil centres the trained Veterinary Assistant Surgeons were giving training to village 'chamars' etc. and the Department of Commerce and industry as keen to open similar centres in the Block areas throughout the State. He further said that at present only about

1 per cent of all cattle in the State were being slaughtered against at least 5 per cent useless cattle. Similarly, of the total sheep population, 6.3 per cent were slaughtered, and of the total goat population 11.4 per cent were slaughtered.

Shri I.D. Manthra, Murthy. Deputy Director, Animal Husbandry, Madras informed that in Madras State even the Cattle Preservation Act was not being enforced properly because it was only an executive order of the Government and not a regular Act. He further stated that the Veterinary Surgeons employed in the slaughter-houses had actually no powers to condemn and reject, as such powers under the Municipal by-laws vested only with the Local Health Authorities. Shri Manthra Murthy also informed that many of the panchayats had not set up any proper buildings etc. for the slaughter of animals.

Shri L.S.P. Sarathy of the T.C.F. said that the T.C.F. was collecting only cattle livers, about 1200 lb. daily from Madras and also from the surrounding area of about 30 miles at the rate of 9 annas per pound. The livers were collected in the evening, put in the cold storage at Moore Market and transported to the factory the next day, where they were minced and processed and the concentrated extract was flown to the T.C.F. in Bombay. Liver extract powder for oral administration was being manufactured locally.

Shri A.N. Lazarus of Spencer and Co. and also President, Madras Branch of the India Pharmaceutical Council, apprised the Committee of the activities of his firm in the meat trade.

Shri V. Naidu of Appah and Co., Madras informed that his firm was mainly dealing with whole sale imports of drugs etc. from abroad. They were formerly importing Evans' products, including liver extract and thyroid and pituitary preparations, but they were not importing these products now. He felt that the Government of India were making a good move in making the country self sufficient in the glandular products.

Shri D.N. Natrajan, Chief Chemist, Mount Mettur Pharmaceuticals Ltd., Madras informed the Committee that his firm was preparing hydrolysates of meat and liver obtained from goats. They were using meat and liver of goats because they found that in this species the nitrogen content was a little higher. In the process of digesting they were using papain that was chiefly made by "Ciemce" Traders, Calcutta. The firm was preparing liver extract for oral use only.

Shri Y. Nayudamma of the Central Leather Research Institute, Madras suggested *inter alia* the provision of a curing shed and cold storage facilities in the slaughter-houses for efficient handling and curing of hides and skins. He also desired that the Committee might examine the possibility of certain anaesthetics being used before slaughter as is being done in certain places in U.S.A. *Shri R.W. Thiagarajan* of Parry and Co. Ltd., Ranipet, informed that his firm was preparing and marketing bone meal, blood meal, horn-and-hoof meal, and leather meal.

The bone meal was being prepared in quantities of eight thousand to ten thousand tons annually. Of this, about three to four thousand tons

was actually made by the firm and the remaining was purchased from Bombay and other places. Almost all this bone-meal was raw or unsterilised except small quantities meant for feeding the animals. Bone meal made by the firm had a nitrogen content of 3-4 per cent and phosphorus content of 20-23.

The blood-meal was being supplied to the firm by a contractor, who collected blood from the Madras slaughter-house, processed it and delivered it to the firm as blood meal. The firm then incorporated this blood meal with bone meal, superphosphates etc. for making a fertilizer mixture. The firm was handling about 70 tons of blood meal in the year, purchased at the rate of Rs. 250 per ton for at least 11 per cent nitrogen content.

The horn and hoof meal was being prepared from the horns of cows and hoofs of all species, which were steamed under high pressure and powdered in the disintegrator. It contained 12-13 per cent nitrogen. The firm was preparing about three hundred tons of this meal in the year. It was being sold as "steamed-horn-and-hoof meal" for use as manure.

Leather meal (or organic meal) was prepared from leather waste, which was purchased at about Rs. 40 per ton. This waste was steamed under pressure, dried, disintegrated powdered and sold as fertilizer.

Shri R. Raghunathan, Manager, Wilfred (Private) Ltd, Madras, informed that his firm was interested in making gland hormones. He emphasised the need for storage facilities, adequate veterinary personnel, and facilities for efficient collection etc. in the slaughter-house. He also recommended that the collection of blood should be improved (and the process mechanized) so that it may be utilized for making haemoglobin syrup and other blood preparations. At present his firm was importing some quantities of haemoglobin powder from abroad.

Shri A.D. Souza, Principal, Veterinary College, Madras informed the Committee that he was often called upon to give certificates for casings, hides and bones exported abroad to Japan and other places. Random samples were collected and tested for anthrax. He informed that so far there had been no instance of the Principal's certificate not being accepted in a foreign country, though in one case where a private practitioner issued the certificate it had to be again issued by the Principal. He was of the opinion that such certificates should be issued only by some Government-recognised Veterinary surgeon nominated for the purpose by the Government.

Shri Mudaliar emphasised the need for proper training of the staff in meat inspection and provision of adequate facilities for ante-and post-mortem examinations in the slaughter-houses. He recommended that there should be not one but at least four model slaughter-houses located in the different regions of the country and that the staff of these slaughter houses should be properly trained and equipped through training abroad in up-to-date slaughter-houses.

(vii) Evidence of witnesses recorded at Lucknow.

Dr. B. Mukerjee, Director, Central Drug Research Institute, congratulated the Government in taking steps in the right direction for the improvement of slaughter-houses and meat inspection practices, which in

turn, would be responsible for the qualitative and quantitative improvement in the production of glandular products. He reiterated that there was acute shortage of such products in the country and said that a well-planned early action was called for. He added that on the basis of what he had seen abroad there could be no two opinions with regard to the urgency of starting of a model set-up in this country. He was also of the opinion that refrigeration facilities were necessary not only at the slaughter-houses but also for the transport of meat and other such products from one place to another. He further remarked that technical personnel and know-how were available in the country, but there was shortage of source material. He also hinted out that the ban on cow-slaughter was responsible to some extent for the shortage of the required material and that liver extract was actually manufactured in India and the foreigners processed it and charged 10 times more.

With regard to the age group of animals from which they could derive the maximum benefit from the point of view of the preparation of pharmaceutical products. Mr. Mukerjee said that he was not sure of the actual age group but was of the view that normally ages up to 12 to 15 years were quite suitable for the purpose.

Regarding the minimum number of cattle to be slaughtered for the collection of a suitable quantity of glandular products, he replied that for the economic processing of insulin there should be at least 500 large animals killed each day. He was of the view that if they could provide facilities for the collection of glands and their storage in deep freeze cabinets to process such pooled supply it would be an economical operation.

Dr. S.N. Rastogi, Medical Officer of Health, Municipal Board, Lucknow, informed the Committee that they had three slaughter-houses in Lucknow-two for small animals and one for large animals. The total number of sheep and goats slaughtered daily in these places was 400 and the number of big animals was 20-25. These animals were bred mainly round about Lucknow. With regard to the distance between the two slaughter-houses meant for slaughtering small animals, he said that it was half a mile or so. In reply to a question about the detailed ante-mortem and post-mortem examinations of the animals, the Veterinary Assistant Surgeon replied that it was not possible to conduct thorough examinations in view of the paucity of time, as the slaughtering hours were from 4 A.M. to 8 A.M. in all the slaughter-houses. Moreover it was not possible for one man to attend to all this work. The Veterinary Assistant Surgeon also informed the Committee that during the past three years he had not condemned even one whole carcase but only parts were condemned occasionally. The Committee was also informed that there was no export of casings etc. from Lucknow and that some blood, meat, liver etc. were supplied to local institutions. In the end, the Veterinary Assistant Surgeon said that due to religious sentiments there was little possibility of effecting a change in the method of slaughter.

Shri R.K. Shukla of Safeabad, District Barabanki informed the Committee that he was also the President of the local Panchayat there. The

market at Safeabad where the sheep and goats were sold and slaughtered, was quite in the open and affected the sentiments of those who could not stand such sights. It was, therefore, necessary that the place for slaughter of the animals should be away from the heart of the village and that it should be properly covered and provided with all other amenities. He further informed the Committee that at Safeabad about 48 male-goats were slaughtered in a week. He requested that the District Board authorities should examine the animals before slaughter and pay frequent visits to the slaughter-house so that the people working there are always alert and careful.

Shri M.I. Qureshi introduced himself to the Committee as a professional butcher and hide merchant at Lucknow. He said that formerly there were two flaying parties which looked to the work of proper flaying in slaughter-houses. Since the discontinuance of these parties the complaints had again begun pouring in. He agreed that due to improper flaying the price of the hides was reduced by as much as Rs. 5 to 10 in each case. Due to slackness in their business, the economic condition of the butchers had become very bad. They had been reduced to poverty and could ill afford to give proper education to their children. He also complained that the animals which they received for slaughter were quite useless and old. He recommended the supply of sufficient number of pulleys for hoisting big carcases, good knives and other implements and better quality of animals. The deterioration in the quality of meat arose from the hasty removal of meat from the slaughter houses which did not give sufficient time to the workers concerned to clean it properly. It was mainly due to the fact that keen competition among the butchers did not allow them to wait longer in the slaughter-house for better cleaning. He was of the view that much improvement could be effected if the contract was given to one man who would look to better cleaning and other allied matters.

In reply to a question *Shri Qureshi* replied that the system of licensing of flayer's, instead of remedying the situation, would complicate matters and serve no useful purpose. He felt that frequent inspections from the authorities concerned would improve matters. To keep the flayers more careful, he had no objection to the imposition of fines for bad flaying.

Shri Qureshi visualised that the introduction of the system of grading of skins on all-India basis would also be welcome to the people and workers in the trade.

M/s Ghulam Rasul and party of Kanpur informed the Committee that the slaughter-house for big animals in Kanpur was not being properly maintained. On an average 30-35 buffaloes were slaughtered there, which comprised 75 per cent females and 25 per cent males. There was no fencing in the slaughter-house, nor was there any protecting roof. Ventilation was also not good. They added that transportation facilities for carrying meat from the slaughter-house to the shops were not adequate. They were of the view that if some municipal carts were provided for the purpose, it would improve matters very much. They were also in favour of the provision of cold storage facilities. There was no veterinary

assistant surgeon in the slaughter-house, and only sanitary inspectors looked after the work. The Committee were also informed that there was no 'forward contract system' in Kanpur. Due to increase in the population of the city and neighbouring localities, increase in the number of licences—both for butchers and for meat sellers—was advocated. The provision of cranes and pulleys in slaughter-houses, especially for big animals, was also required. There was no *Jhatka* slaughter house in Kanpur.

Shri Mohd. Ummar, a bone merchant of Lucknow, informed the Committee that District Boards auctioned different areas for the collection of bones and that such a contract for the Lucknow district was held by him. He, however, complained that in a few cases village panchayats stood in the way of collection of bones. He was also not happy about the rules of the railway authorities, according to which the trucks with bones had to be brought near the wagons on railway platforms which, in addition to being inconvenient, resulted in loss in the total weight of bones. He also complained that the weight of bones as recorded by railway authorities—was not acceptable to the factories.

(ix) **Evidences Recorded at Bareilly.**

Dr. H.C. Rai, Medical Officer of Health, Bareilly, admitted that the slaughter-houses that they had, were not of the required type and standard. They required improvements in many ways. These could only be effected with the help of the State, because the financial position of the Municipal Boards was not sound. He wanted the Slaughter-houses to be improved on the sanitary pattern. As regards gut industry he was not in favour of any encroachment by the Government on the private sector. Private individuals had been doing that business for many years. If the Government took up that business the people in the trade would dictate their own terms. Even if their services were requisitioned, a similar trouble would arise. With regard to the utility of blood, he was of the view that the work should be left to private bodies, some of which were already engaged in the line. The Government did not have the technical personnel who could take up that work. His suggestion, therefore, was that there should be a Central Board which should purchase all the guts from small traders and then arrange to process them and export them to foreign countries. He however doubted the probability of municipalities taking up that work.

Shri Juneja, Joint Director, Animal Husbandry Department, U.P., explained that there was no intention on the part of the State Government or the Animal Husbandry Department to encroach in any way, on the private sector. The State Government was ready to give Rs. 10,000 to the Bareilly municipal board for improvement of slaughter-houses.

Shri R.S. Khanna, Chairman, Municipal Board, Bareilly, informed the Committee that they were intending to shift the present slaughter-house for big animals to a new site, for which they had already acquired the necessary land. This had been necessitated due to the fact that the city was expanding in every direction. Also there were no proper arrangements for post-mortem examination due to the difficulty of finances. *Shri Juneja* said that in case the authorities of the slaughter-house came

forward with a workable scheme for the improvement of the slaughter-houses in Bareilly and allied matters connected therewith, then the State Government would be prepared to subsidize to a reasonable extent.

Dr. G. P. C. Lal, District Medical Officer of Health, Bareilly, was of the view that immediate problems before them were, the improvement of the slaughter-houses, preservation of glands, ante-and post-mortem examinations etc. They had also a problem before them of shifting meat shops to proper places and the maintenance of the necessary hygienic conditions therein.

Shri Darbari Lal, Chairman, Distt. Board, Bareilly said that the problems under consideration were connected with cities, and that, therefore the District Boards did not come into the picture. As regards pigs, he said they did not go to slaughter-house as there was no separate slaughter-house meant for them.

Shri R.L. Khandelwal, President, Gaushala Society, Bareilly, though not connected with the question of slaughter-houses and slaughtering of animals, was of the view that pigs were killed very mercilessly. He also complained that the habitations near about the slaughter-houses were in a very miserable condition. In addition to foul smell and dirt, small pieces of flesh and bones etc. were carried by vultures and crows and thrown into the houses nearby. He, therefore, suggested that slaughter-houses should be removed away from the cities. As far as Bareilly was concerned, he was of the view that the municipality should provide covered vans of special type for the transport of meat and that it should not be exposed to those who were against meat eating and slaughter of animals. Also every such shop where meat was sold should have coloured glass panes so that outsiders may not have a view of what sold in these shops.

Shri Azmat Ullah, a gut dealer of Bareilly, explained to the Committee the different kinds of guts etc. prepared by his firm. He said that the guts were generally used for musical instruments, tennis and badminton rackets, and for surgical use. The guts meant for rackets, were salted. Those required for surgical operations were dried and no slat was added to them. *Shri Azmat Ullah* further informed that there was no plant for the manufacture of such guts in India and that State aid up to about Rs. 10,000 would be sufficient to make the business going. Moreover the community of gut dealers being backward and poor, it would not be possible for them to arrange this money. *Shri Ullah* also desired that there should be a proper separate place for gut dealers for washing of the guts in the slaughter-houses. There should also be adequate arrangements for the supply of water there. *Shri Maseet Ullah*, a gut merchant of Bareilly, informed the Committee that they sent their material to M/s A.D. Meyer and Co. and M/s Mohd. Yasin and Co. He stated that the guts produced in India were processed in foreign countries. These countries were making a lot of money on that account. It was desirable that these guts should be processed in India and also utilized in this country.

Shri Hameed Raza Khan, Chairman, Town Area Committee, Shahi, (Bareilly) informed the Committee that only buffaloes were slaughtered in

Shahi Slaughter-house, the average number being 7 to 8 per month. As regards the cost of such buffaloes he replied that it was between 50 to 60 rupees and that the meat was sold at the rate of Re. 1 a seer. He added that the rate of slaughter of goats was annas eight per goat and for pigs rupee one each. The pigs were slaughtered outside and there was no slaughter-house meant for them. He was of the view that increase in taxes would not mend matters.

Shri S. A. Mugtadir, S.D.M., Baheri, said there was only one slaughter-house in Bahari. It had three rooms. The number of animals slaughtered there was 3,000 per year, 2,100 being big animals and 900 small ones. There was no cover on the slaughter-house. The reason of the bad state of affairs of the slaughter-house was that formerly it was under the Notified Area Committee, but recently it had come under their control. They were going to set up separate waiting sheds for animals, and also provide good water and other amenities required to make the slaughter-house run on improved lines. They had no veterinary officers at present, but as their finances had improved they would look into the matter without any further delay.

Shri Abdul Majid, Chairman, Town Area, Richa, said that Richa was a small town, where 4-5 buffaloes were slaughtered per day. They had no sanitary inspector there. Only there was one stock-man who attended to the work, but this was not a satisfactory arrangement.

Shri J. S. Aggarwal, M. L. A., confessed his ignorance about the actual working of the slaughter-houses in Bareilly, but as a public man he could say that there were two slaughter-houses in Bareilly city, one for big animals and the other for small animals. Public agitation was going on for the removal of the slaughter-house for the big animals. In 1928 this slaughter-house was constructed at a cost of Rs. 1,85,000. The Municipal Board paid this money. Now it required many repairs. In case a new building was going to be built for the slaughter-house in question it will satisfy the general public, as it will be removed away from its present site, and will also be a modern one. In case it was not possible to do so, then the present slaughter-house should be repaired, and at least other subsidiary industries connected therewith which had sprung up in the adjoining area should be removed. It was also necessary to remove the other slaughter-house far away from the city. *Shri Aggarwal* was of the view that ante-and post-mortem examinations were absolutely necessary to avoid any danger to public health. He also was against the idea of the sale of meat and slaughter of animals just in the open near the slaughter-house. The provision of water supply in the slaughter-house was also necessary. He also wanted cooling and refrigeration arrangements to be provided in the slaughter-houses and other places where meat business was done. He added that more veterinary officers should be employed by the authorities so that the work may be looked after properly. He desired that the slaughter-houses should be established on modern lines and also stressed that under-weight and sick animals should not be slaughtered. He thought it necessary that there should be flush system in the slaughter-houses.

Dr. Ram Ballabh, formerly Vice Chairman of the Municipal Board, Bareilly, made the following suggestions :-

1. Slaughter of animals should not take place on roads, the defaulters should be imprisoned for a period of one year or so.
2. Slaughter-houses should be at least one mile away from the city.
3. Police should be empowered to take necessary action against those who indulged in unauthorised slaughter of animals and at places not meant for such purposes. At present no such powers vested with the police authorities.
4. Police officers should be authorised to inspect the slaughter-houses.
5. According to the orders the hours of slaughter were from 6 to 7 a.m., but they were not adhered to and there was no check on slaughtering that took place thereafter.
6. Inspite of the fact that cow slaughter had been banned in the Uttar Pradesh, still it was going on in the city of Bareilly. Strict vigilance on the part of the authorities was, therefore, called for.
7. Sick, wounded and unwanted animals were slaughtered and consumed by the public, which were likely to endanger their health. This required looking into.
8. There should be better arrangements for ante-mortem and post-mortem examinations. This would no doubt mean an increase in the number of veterinary officers. The additional money required for that purpose could be made available by imposing a levy, say of 4 to 5 rupees per animal.
9. Honorary visitors should be allowed to pay a visit to the slaughter-houses to enable them to see for themselves the exact state of affairs prevailing there. According to the present arrangements no official, excepting the Chairman of the Municipality, was authorised to visit the slaughter-houses. That restriction needed relaxation.
10. Dealers in the trade of meat and ancillary trades should be licensed.
11. Godowns should be constructed according to proper specifications.
12. The Medical Officers of Health and Civil Surgeons should visit the slaughter-houses at least once a month.
13. Honorary visitors should have the right to visit godowns.

Dr. Lal in the end, suggested that the slaughter-houses should be under State control. They should not be left to the care of local bodies. The Department of Animal Husbandry in the State should have some control in the matter. The rates of slaughter etc. should be fixed by the

Government. Even in Bareilly city there were many meat shops which had not been licensed, and as he had no control over them, he could not strictly enforce the law. He was of the view that central enactment was necessary if matters were to be improved. By-products and material like pancreas etc. were ordinarily going waste, but if these were required by the Government for experimental purposes, etc. the butchers would not part with them without charging exorbitant rates. This showed the control and unity of the butchers in the trade. Hence certain control by the Government was imperative. Dr. Lal further suggested that meat should be considered as food and should come under the Food Adulteration Act in case the desired quality of meat was not sold by somebody.

(x) Evidences recorded at Moradabad

Dr. K.S. Pradhan, District Medical Officer of Health, informed the Committee that the animals meant of slaughter were brought early in the morning in the City and were slaughtered shortly afterwards. In his opinion the proper way would be to bring the animals in the evening prior to the day of the slaughter. Moreover, there was only one veterinary officer employed for Moradabad slaughter-house. The work was so much that he was not able to cope with it. There was one clerk from the District Board on whom the District Medical Officer of Health had no control. Due to this dual control, their affairs were not satisfactory. On an average 20-25 pigs were slaughtered each day at different unauthorised places. The setting up of a separate slaughter-house for pigs was, therefore, an absolute necessity. The blood was not put to any proper use. It was sold on contract and it was felt that the contractor was making a lot of money. He also informed the Committee that he had made certain recommendations to the Government in this respect, some of which were as follows :—

1. There should be water taps in the slaughter-house.
2. A complete roof with side-projections was necessary.
3. The slaughter-house should be away from the City.
4. There should be whole-time veterinary officer attached to it.
5. There should be a waiting shed for the animals.

Dr. Pradhan further said that the material obtained from the slaughter-house in Moradabad was not utilised for pharmaceutical purposes. He also said that there was no limit on the number of animals to be slaughtered.

Shri M. Yasin, President, District Board, Amroha, informed the Committee that they had made certain improvements in the slaughter-house at Amroha, though these may not be according to the expectations of the Committee. He, however, complained that their financial position was not quite good.

He further said that they wanted the services of a whole-time veterinary officer and also the provision of better supply of water,

Dr. Khaman Singh, M.L.A., suggested that the slaughter-houses should not be under the control of District Board authorities but under the district Magistrate. If the latter course was adopted, matters would improve to a very great extent.

Shri M.N. Lakhanpaul was away in Bombay, and an employee of his firm appeared before the Committee, but he could not give any satisfactory reply to the questions put by the Committee. He was, however, requested to remind Shri Lakhanpaul that the note promised by him at Bombay had not yet been received from him by the Committee in spite of many reminders and that he should expedite its despatch without any further delay.

An employee of M/s Boot and Co. then appeared before the Committee. He also was not able to furnish the required information. He, however, informed that they were dealing in big animal guts and that the material was received from Bihar. The head officer of the firm was in Bombay.



APPENDIX IX

(a) List of reports consulted by the committee

1. Report of the Committee for the improvement of slaughter-houses in the State of Bombay, 1953.
2. Report of the Pharmaceutical Enquiry Committee, Ministry of Commerce and Industry, Government of India, 1954.
3. Report on the Marketing of Meat in India. Directorate of Marketing and Inspection, Government of India, 1955.
4. The Survey of Food Hygiene Practices in India by H. Thornton, WHO/FAO Food Hygiene Consultant, 1953.
5. Proceedings of the 10th meeting of the Animal Husbandry Wing of the Board of Agriculture and Animal Husbandry in India Poona, 1953.
6. Joint FAO/WHO Expert Committee on Meat Hygiene, first report, 1955.
7. Report of Indian Pharmaceutical delegation to the U.S.S.R. and other countries in Europe, Ministry of Heavy Industries, Government of India, 1956.
8. Report of the Biological Sub-Committee appointed at the Joint meeting of the Pharmacology Advisory Committee of the I.C.M.R., P & D Research Committee of the C.S.I.R., and Medicinal Plants Committee of the I.C.A.R. held on 7th February, 1956 at New Delhi.
9. Report of the Russian delegation invited by the Ministry of Commerce and Industry, Government of India to survey the scope for the development of pharmaceutical industry in India in 1956.
10. Report on Meat Hygiene, 1957, published jointly by F.A.O. and W.H.O.-F.A.O. Agricultural Studies No. 34 (W.H.O. Monograph series No. 33).

(b) List of persons who submitted Notes.

1. Dr. K.V. Giri,
Professor and Head of the Department of Biochemistry,
Indian Institute of Science, Bangalore.
2. Dr. D. Pattabhiraman,
Director of Animal Husbandry, Madras.
3. Dr. B. Mukerji,
Director,
Central Drug Research Institute, Lucknow.

4. Dr. K.A. Hamied,
Chief Chemist and Technical Adviser,
Chemical, Industrial, and Pharmaceutical Laboratories Ltd.,
Bombay.
5. The Honorary Secretary,
S.P.C.A., Madras.
6. Dr. (Mrs.) S.V. Tilak,
Honorary Secretary,
S.P.C.A., Poona.
7. Shri A.P. Pilit,
(Extracts from "the Tanner" Col. 10, March 1956, No. 10)
8. Shri Nayudamma,
Central Leather Research Institute, Adyar (S.I.)

(c) Important Communications

- (i) *Copy of U.O. Note No. 134 BD. II (29)/557 dated the 4th August, 1956 from the Scientific and Industrial Research.*

At a joint meeting of the Pharmacology Advisory Committee of the Indian Council of Medical Research, Pharmaceuticals and Drugs Research Committee of the Council of Scientific and Industrial Research and the Medicinal Plants Committee of the Indian Council of Agricultural Research held at New Delhi on 7th February, 1955, a Sub-Committee on Biological products (including Glandular products) was constituted to recommend ways and means to improve the quality and quantity of country-made biological products with a view to future self-sufficiency.

The recommendations adopted by this Sub-Committee were considered by the Pharmaceuticals and Drugs Research Committee and later by the Board of Scientific and Industrial Research in its meeting held on the 23rd. March 1956.

A note on the recommendations adopted in respect of manufacture of glandular products and the final decision taken by Board of Scientific and Industrial Research is given below.

The question of assessing the availability of biological, glandular and other animal products actually manufactured in India and finding out ways and means of improving the quality and quantity of these products with a view to self-sufficiency was discussed at a joint meeting of the Pharmaceuticals and Drugs Research Committee of the Council of Scientific and Industrial Research, Pharmacological Advisory Committee of the Indian Council of Medical Research and Medicinal Plants Committee of the Indian Council of Agricultural Research held in New Delhi on the 7th February 1955. A special Sub-Committee on Biological Products was constituted for examining the subject and give its advice.

The Sub-Committee which collected various data as to the country's demand of these products and with regard to products obtained from animal glands was of the opinion that existing conditions in the slaughter-houses

for the procurement of animal glands of suitable quality and in adequate quantities were not satisfactory. Since these glands constituted the main raw materials for gland products which are of extensive use in modern therapy, the Sub-Committee recommended immediate improvement of slaughter-houses particularly in the states of West Bengal and Bombay where the leading pharmaceutical concerns were located.

The subject was finally discussed by the Board of Scientific and Industrial Research in their meeting held on the 21st March, 1956. The Board observed that the production of glandular products in India from animals would be un-economical for the following reasons :-

- (i) The facilities available for collection of glandular products in the slaughter-houses were primitive and even if these were modernised, the quantity of glands available would be insufficient. Glands used for glandular products were always obtained from big animals while in India the slaughter of big animal was gradually on the decrease.
- (ii) Most of the glandular products were now synthetically manufactured at cheaper rate.
- (iii) *Note by Dr. K. A. Haines of the Chemical, Industrial and Pharmaceutical Laboratories Ltd., Bombay.*

Modernisation of slaughter-houses with a view to improve quality of animal organs for the manufacture of hormones and other products.

The question of improvement in slaughter-houses with a view to make them more modern has been discussed by several committees appointed by the Union and State Governments. The main problem discussed by the Committees was the improvement in storage and transport of animal organs, such as glands, liver, lungs, heart, pancreas with the purpose of making these organs reach the manufacturer in the best possible condition for manufacture of various hormones and other products.

The next question of supply of meat in better condition than at present was also considered by the Committees.

There cannot be two opinions about the necessity of modernising the slaughter-houses which today are very old-fashioned and unhygienic.

From the point of view of Pharmaceutical Industry what I find today is not so much the *quality* of the animal products but the *quantity* of the animal products. With the progressive restriction on the slaughter of big animals, the quantity of organs available from the slaughter-houses is getting less and less. The construction of modern slaughter-houses will therefore, not solve this important problem. We have first to see that sufficient animal organs are available to the Industry before we undertake to spend crores of rupees in modernising slaughter-houses to help the Pharmaceutical Industry.

Much is being said about the glands required for the manufacture of hormones. In this connection I beg to point out that except Pituitary

hormones almost all the other hormones are now made synthetically, such as Adrenaline, Thyroxin, Methyl Testosterone, Testosterone Propionate, etc. Insulin, however, is made from Pancreas gland. The smallest commercial unit for manufacture of Insulin requires about 1,000 kilos of Pancreas per day. This large quantity of Pancreas gland is, however, not available even in the big slaughter house of Bombay or Calcutta and I wonder whether due to restrictions on slaughter of bigger animals this large quantity of Pancreas could ever be available.

While fully supporting the necessity of modernising the existing slaughter-houses, I wish that the above points regarding the availability of animal organs for the requirements of the Pharmaceutical Industry be fully taken into consideration.

(iii) *Copy of letter No. D.I.R. (10)/57-O.C., dated the 4th June, 1957, from Dr. B. Mukerji, Director, Central Drug Research Institute, Lucknow.*

I made it clear before the Committee on Slaughter-houses and Meat Inspection Practices at its last meeting in Lucknow that it will be extremely difficult to give specific targets for the glandular products etc. which we need for making India self-sufficient during the Second Five-Year Plan. The Drug Development Council and the Pharmaceutical Enquiry Committee have discussed this problem at some length but could not come to any agreed figures on targets to be made during the next five year period. The Russian team of Pharmaceutical experts, who visited India and toured round the various centres from where gland products could be obtained for pharmaceutical processing, suggested certain targets which were later considered to be slightly on the higher side by the Indian team of experts who met afterwards with a view to brief the Indian team just prior their tour to Russia to enable them to pick up new ideas in this direction.

I think it would be best if I give some targets of production based largely on my collected data. These differ from estimates made by other group of experts but I have the feeling that this gives you a fairly accurate estimate of the needs of the country which are definitely on the increase now. If the purchasing capacity increases, these will be even higher figures :

1. Insulin	—	100 m units.
2. ACTH	...	20,000 units.
3. Prolactine	...	500 units.
4. Pituitariumsiccum (purified oxytocin)	...	26 kg.
5. Vasopressin	...	10 kg.
6. Gonadotrophin	..	2—3 kg.

If the slaughter-house facilities are properly organized, various other important biological products can also be prepared. Some of these are listed below :-

1. Cholesterol from dried spinal chord which can be used for the synthesis of various steroid hormones and also cortisone	Quantity not possible to state.
2. Pepsin from Stomach	—do—
3. Blood substitutes	—do—
4. Purified blood protein fraction like albumin and globulins, etc.	—do—
5. Cholic acid	—do—
6. Gelatin	—do—
7. Mucins	—do—
8. Heparin from Lungs	—do—
9. Thrombin from clot for topical application	—do—
10. Intrinsic factor from Intestinal mucosa	—do—

Intensive work on blood fractionation products and the possible uses of the clots, apart from its use at present as manures or for the processing of fibrinogen, needs to be done in this country. Several centres such as the Central Drug Research Institute, the Biological Products Section of the Veterinary Research Institute and the Haffkine Institute, Bombay can be induced to take up this work and there is very possibility that good results and economical processes would arise therefrom.

(iv) *Note by Dr. K.V. Giri, Head of the Department of Biochemistry, Indian Institute of Science, Bangalore.*

Utilisation of slaughter-house by-products.

Slaughter-house by-products and wastes formed important source materials for the manufacture of diverse pharmaceutical preparations, drugs and fine chemicals. Normally, everyone of these preparations is imported to this country mostly, everyone of Germany, England, the United States of America, Switzerland and to some extent even from Australia. This is a deplorable fact, considering the greatest cattle wealth of this country and the necessity of even greater extermination of drought cattle—a moot point with our politicians of the present day. Lack of adequate organisation in regard to proper transport, hygienic conditions of the slaughter-houses, preservation of the rapidly decomposable material by refrigeration and immediate removal to places of processing and what is even more, management of slaughter-houses without technical aid have stood in the way of proper commercial exploitations of these extremely valuable materials which in the long run determine the well-being of the entire country.

However, under the stress of the recent world war, the necessity to investigate such possibilities and provide better organisation of conditions

have been keenly felt and as the demand for the more important pharmaceutical preparations being very acute during those abnormal times, investigations towards alleviation of such a situation were instituted in these laboratories. It must be confessed, however, although a great amount of spade work was conducted and even in some cases very fruitful practical results were achieved, these endeavours could not be followed up with renewed vigour after the cessation of the hostilities and an unique opportunity was lost thereby to make our country at least completely self-sufficient in respect of these pharmaceutical preparations.

Practically every part of the slaughter-house produce is utilizable with profit in one industry or another. These can be classified as follows :

(1) *The meat including the marrow* of the bone which is used directly for edible purposes, finds application in the manufacture of meat broths and meat extracts.

(2) *The hide which is employed in tanneries*—even here the hide trimmings and other wastes are not utilised for extraction of high grade gelatin of which we are in short supply.

(3) *The brain and the spinal cord*—often the brains are used for edible purposes, but the spinal cords are completely lost due to a peculiar method of cutting the carcase lateral to the vertebrae, during distribution of the meat. In western countries the spinal cords are specially weeded out and cholesterol of which is particularly rich (nearly about 6 to 8 %) is manufactured. It may be remarked that cholesterol is the starting point for manufacture of such valuable products like androsterone, testosterone, vitamin D₃, etc. Unless a reorientation of the slaughter-house practices is effected, it is impossible to recover this valuable material. We have analysed this material in this Institute and found while there is no technical difficulty involved, the above mentioned organisational improvements are called for.

(4) *Bile and bile products*—bile is an important source of raw material for some of the very potent highly praised drugs. The bile salts as such, specially prepared from ox bile find therapeutic application even in indigenous systems of therapy administered under the name of "Gorjanam". The important bile acid, cholic acid is the starting point for the synthesis of such drugs as desoxycorticosterone and other steroids. In America, they have been in so much short of this material that alternative raw materials are being sought for, while practically every slaughter house of our country simply allows the material to go to waste. Experiments conducted in our laboratories clearly demonstrated the ease of preparing a fine grade bile salt preparation. Further, cholic acid could also be prepared in a fairly pure condition very readily.

(5) *Bones and Horns* form another important by-product of the slaughter-house. At present there are a few bone meal factories which, however, do not attempt to extract bone oil or the cartilagenous matter but simply crush them for fertilizer purposes. This is an unsound proposition and unfortunately till now no attention has been paid to this aspect. The horns find a limited use in the manufacture

of knife-handles, combs and buttons. But with the advent of the plastics it is delegated to the backgrounds. Some attempts, very imperfect in nature, have been made as we understand by shaving and cutting to incorporate them in fertilizers. Research has to be carried out in order that they may be put to better use.

(6) *Blood* is a very valuable component from which the possibilities of obtaining high grade peptone have been explored in our laboratories. It has been found easy to prepare peptones of various types, by controlled hydrolysis of fibrin by the action of a few micro-organisms specially isolated possessing a high peptinizing power. At present practically the whole blood is dumped out and used as a fertilizer. Surely, by proper experimentation it could be put to a more discriminative application. At present no serum preparations for bacteriological use are available in this country.

(7) *Hair and wool* : These are commonly utilized for making various fabrics but even here no adequate recovery of the wool fat (Lanolin) from the washings and cleanings is effected due probably to inadequate turn-over and lack of technical know-how.

(8) *Glands* : Some of the very important and widely used drugs and pharmaceutical preparations owe their origin to the glandular by-products collected in a properly managed slaughter-house. They include (1) Insulin (2) Pituitrin (3) Pancreatin (4) Liver extract (5) Thyroid powder and (6) Adrenalin. As the demand for these products was very immediate much of the effort of the biochemical laboratory of the Indian Institute of Science was directed towards standardization, manufacture and supply to the medical division of the Government of India during last war.

Specially, the pituitary extract was required very urgently for treatment of shock. Pituitary powder from posterior lobe of the cattle was standardized and a standard preparation sealed in ampoules was deposited with the Director, Biochemical Standardisation Laboratory to serve as a standard comparable with the international one.

The various methods of manufacture of insulin were carefully gone into and a suitable procedure to suit local conditions was evolved. A good quantity of this product was also sent to the Government of India to meet their medical requirements during the war.

Although a concentrated preparation of adrenalin was prepared from the adrenal glands comparable in quality expected by the pharmacists, it is doubtful if this can hold its own against the cheaper synthetically made adrenalin now available in the market.

Pancreatin was also prepared and tested by some industrial concerns to be quite satisfactory.

The conditions for the preparation of a good grade thyroid powder have been standardized.

The most important piece of work in this direction concerns the whole Liver extract and hydrolysates and their large scale application

in the cirrhosis of Liver in children. This work was carried out with the co-operation of many hospitals in Bangalore. The results on the whole are claimed to be very satisfactory and worthy of further pursuit.

(9) *Miscellaneous* : Although the following may not appear to be commercially significant, occassionally demand arises for research purposes :—

- (1) Thymus : Preparation of Desoxyribonucleic acid,
- (2) Gastric mucin : From the hog stomach wall.

In connection with some of our researches we required these materials during the war time and so experiments were instituted and carried out satisfactorily in preparing these items on a small scale. Preparation of rennet from the stomach of the calf was standardized in this Department and supplied to the army during last war.

(v) (a) *Notes by the honorary secretary, S.P.C.A., Madras.*

“The most modern practice for the slaughter of animals”

The ideal of the S.P.C.A. is that humane killing of even animals destined for food must be universal. At present religious sentiments of Mohamedans and Jews stand in the way of rendering all the animals unconscious before they are slaughtered. From humane point of view, India's 'Abattors' are definitely far behind those of the most countries of Europe and America. Even in America, a prominent leader of American Humane Movement, New York, was quoted as saying "I could make vegetarians out almost every resident of my City by putting glass-enclosed Abattoir in public square". Incidentally, I may mention the efforts made by the S.P.C.A. to improve the deplorable condition of the locals slaughter-house. The following extracts from the report submitted in 1928 by Mr. P. Parankusam Naidu, (Deputy Commissioner of Police) an Executive Member of the S.P.C.A., when he was deputed to visit slaughter-house, leave even today much to be rectified and done.

“The sight of cutting the throats of the animals thrown down for the purpose, their struggles for lives, the channels of blood flowing from them, the other victims being dragged to the place of slaughter where the predecessors are struggling, their piteous and heart-rending cries and the other animals ready for slaughter, standing in front of them heart-broken and yelling piteously, is for the Gods to see and not for men who have any feeling of love for animals. This method of killing animals so openly as it is done at present should be put down with a strong hand, if cruelty to animals is to be prevented at all, by all concerned, viz., the Corporation, the Police, the S.P.C.A. and above all the public”.

“We ought to get over these difficulties by providing a by-law in the Act, making this cruel method penal”.

(v) (b) *Slaughtering of Animals*

The S.P.C.A. has had humanitarian interests and has been instrumental in actively furthering the cause of animal protection. Briefly the

S.P.C.A. would seek to intervene in whatever way is considered practicable by preventive and educational work to eradicate the evils of which the animals are the victims.

The Society holds firmly to the belief that those unfortunate animals should not be slaughtered in the brutal way and callous manner that they are handled and killed on a whole scale. The pain and sufferings of those helpless victims of man's thoughtlessness are generally too terrible for adequate description. The Society is of the opinion that it can best be solved by the rousing of intelligent public opinion, functioning through the Government agencies as well as by the acceptance of personal responsibility by the concerned contractors and butchers. The Society has invited the attention of the Corporation authorities to this unnecessary cruelty that is going on in the slaughter-houses. It would appear that butchers of live sheep are kept standing in close proximity to the dying ones and that they are dragged one after another and pushed on the dying ones and out in succession, while the slaughtered ones are struggling in death spasms. The Society has made the following suggestions to minimise the horrors to which the poor animals are subjected.

(i) The slaughtering should be done in separate chambers and not in open place.

(ii) The chambers should be closed and no animals should be allowed to be slaughtered in the presence or hearing of other animals.

(iii) After the animal is killed the place should be cleaned and all traces of blood removed before another animal is let into it.

(iv) Humane appliances such as the "Humane Killers" may be adopted.

The available humane killers are the following as published by the American Humane Association.

1. The Captive Bolt Pistol.
2. The Carbon Dioxide Immobilization Chamber.
3. The Electric Knife for Stunning and Slaughtering animals.
4. The New Stunning Instrument of Remington Arms Company.

Separate slaughtering chambers have been constructed by the Corporation so as to prevent the view of the living from the dead animals, and those chambers have been thrown open for use. Unfortunately, the butchers who should use these chambers need a bit of good education in the method of using them so as to conform with the wishes of the society i.e., to prevent the horrors complained of. The Health Officer informed the Society that it would not be possible to introduce the 4th suggestion, i.e. the modern humane appliances for the slaughter of animals for food owing to the religious objections of the butchers. The difficulty is however, that such practices are permitted even under the supervision of the Corporation authorities and no reform can be brought about until the Prevention of Cruelty to Animals Act is amended, as to make the killing of animals in sight of each other an offence in law. It is idle to demand that the Corporation authorities could be of any avail, unless they

could ease the sufferings of the animals concerned, and punish the persons who do such callous practices. There is absolute need for a law or a force of some kind to stimulate adoption of new methods for humane slaughtering of food animals. The methods now in general use are universally cruel.

The Society insists the following means to be adopted :

- (1) More rigid enforcement of the Law relating to the issue of licences.
- (2) No exemption from licence duty.
- (3) The help and co-operation of the police to be enlisted.
- (4) The drawing up of an "Animal Code" to explain in simple terms the provisions of existing legislation with regard to rights, and the responsibilities of the people towards the defenceless animals.

(vi) *Note dated the 7th June, 1956 by the Honorary Secretary, S.P.C.A. Poona.*

Introductory Note :

I am putting up chief suggestions to prevent painful sufferings of animals before they are slaughtered and made available for human consumption.

In explaining the painful suffering of an animal before slaughter I have made all possible attempts to suggest such treatments to animals that there is less or no painful suffering, not only to the animal that is to be slaughtered but for the human being committing the act. It is rather difficult to solve this problem one hundred per cent. However I am suggesting the following points for consideration and putting them in actual execution if possible by binding them by laws and to be watched. The subject also needs periodical study and be amended deeming fit.

The present painful method of slaughtering an animal is to be replaced by admonishing following methods :—

(a) It should be made compulsory to see that the animal is inspected before selecting it for slaughtering from the medical angle because if this is not done it is likely that an unhealthy and diseased animal is also mixed up with other good ones which at times is detrimental to the human consumption.

(b) It is also necessary from various angles that the animal is well fed for a fixed period before it is considered fit for slaughter.

(c) By nature animal is so sensitive that by seeing blood of another animal ordour or symptoms of cries before death is known to the other animal, therefore it is essential that the slaughter-house be kept at a distance to that. Godowns used for housing animals preserved for slaughtering.

(d) The animal instincts are very difficult to be determined by human mind. It is rather safe that they are more instinctive than that of human being. Therefore the present system of painful slaughter is to be abolished and they should be made senseless by admonishing scientific treatment before they are actually slaughtered since it is also painful for a human mind for committing the act. (Pistol and slot method)

(e) General cleanliness which is altogether absent in the present slaughter-houses needs consideration but could be easily supervised frequently and improved upon. From the Hygienic point of view this matter need not be pressed further.

(f) An animal when treated for this purpose should not be seen by the others as it leads to cruelty to animals of the painful suffering before actually treated for this purpose.

Animals when carrying or in heat period should be considered unfit for this purpose.

(g) *Transport of animals* :—In our country it is the practice to rout animals from distant places by road which tires them and gets them exhausted. Different other motive methods be made compulsory for transport of animals beyond the distance of 15-20 miles and during the process it should be made compulsory that they are timely fed.

It is also a common practice that the animal after slaughter is skinned before it becomes cold. This practice should be stopped.

(vii) *Note dated the 27th July 1956, by Shri Nayudamma of the Central Leather Research Institute, Adyar, Madras State.*

Suggestions relative to the improvements of the slaughter-houses and tanning and curing of hides.

Slaughter-houses :

The building for the slaughter-house must be so designed as to provide ventilation; clean floors, proof against flies, rodents, crows etc.; tables; knives bone cutters and other equipments made of or covered with stainless steel; a by-products treatment section, facility for the removal of meat pieces, tallow, bones, horns, hoofs etc. for the recovery of the by-products; overhead hoists for heavy animals; good sewerage system; abundant supply of good treated water; separate sewage disposal system; sterilizing equipments, refrigeration where positive; evisceration table; provision for reception of the cattle and washing of the same; provision for segregation of the rejected animals; provision for a curing yard, & strict meat inspection by veterinary department.

Slaughter :

I. More humane killing methods should be introduced such as stunning or giving anaesthesia.

2. Bleeding may be done in the hoist position or an inclined floor so as to collect the blood at a central place and to avoid its smearing to the hides.

Flaying :

1. Flaying sheds should be erected in some important villages and improved methods of flaying and curing demonstrated. (2) All butchers working in the slaughter-houses should possess a proficiency certificate (3) The flaying job may be done by a team of flayers (4) The flayed hide should be inspected by a hide 'foreman' and (5) Must immediately go to the hide curing yard attached to the slaughter house for immediate curing or preliminary treatments like washing, salting or brining (6) Mechanical flayer may be tried at some important centres. (7) Proper tools as suggested by the FAO organisation ('Flaying and Curing of Hides and Skins as a Rural Industry—by Aten, Innes and Knew) may be supplied to the flayers. (8) The interest of the flayers may be stimulated by :

- (i) Flaying competition in each district and each slaughter-house or between a team of flayers in the same slaughter-house.
- (ii) Cash bonus.

(9) Legislation, where required, for issue of certificates for qualified flayers, methods of flaying, grading etc. may be made (10) Demonstrations of flaying and curing at various centres in active cooperation with other organisations like Cooperative Societies, All India Khadi and Village Industries Board, Small Industries Service Institutes etc. may be held. (11) Proper method of flaying should be taught to Veterinary Doctors so that they may in turn propagate these methods to local butchers.

By products of slaughter-house :

1. Blood—for adhesives, finishes (Manure)
2. Hair—Camel hair brushes
3. Bones, trimming pieces; Glue and Gelatin
Manufacture : Manure, Bone Charcoal Animal feeds etc.
4. Intestines—for gold beaters skin.
5. Guts—for Tennis rackets.
6. Pancreas—for pancreatic enzymes, Insulin manufacture.
7. Liver, Kidney etc. Liver extract manufacture.
8. Pituitary, thyroid glands etc : Manufacture of
Pharmaceuticals, drugs, hormones and chemicals.
9. Tallow—Edible and inedible tallow for soap, glycerine, plasticizers,
lubricating oils, cutting oils etc.
10. Moods and horns—for neatsfoot oil.

An efficient and quick system of byproducts treatment must be devised. Vigorous efforts ought to be taken for the manufacture of hormones;

pharmaceuticals and drugs which number more than 50 out of the glands mentioned above. Valuable foreign exchange may be saved to the tune of crores

1. Blood :—used in the preparation and application of seasoning, and finishing of leathers, also as adhesive or binding material.
2. Trimming pieces:—manufacture of edible, photographic gelatin, glue, manure; manufacture of leather Boards.
3. Pancreas :—preparation of enzymatic products called 'BATES' used for Bating to remove the interfibrillary proteins material in the hide. Presently Bates are being imported and C.L.R.I. had developed processes to prepare them locally and C.L.R.I. Bates are tested and approved by the trade. Till insulin is manufactured, some amount of pancreas could be released to the development of this industry.
4. Hoofs and Horns :—in the manufacture of Neatsfoot oil—which is applied to the leather in the form of emulsion to make it supple, soft and strong. Presently it is being imported and should be stopped.
5. Tallow :—used for impregnating in leather to make it water-proof.

(viii) *Extracts from the report of the Russian Delegation to advise on the scope for the development of the Pharmaceutical Industry in India.*

Present position of the drug Industry and main Recommendations

A special laboratory should be set up at the Haffkine Institute, Bombay, for working out problems connected with the production of glandular preparations. This laboratory would enable also the starting production of A.C.P.H. within this laboratory.

Recommendations

Glandular Products

From the animal raw materials, only liver for production of extracts is used on industrial scale in India. The rest of the glandular raw materials, are neither used for production of drugs nor even investigated to determine their active principles. Indian specialists attribute the absence of the production of glandular preparations to the inability of collecting endocrinic raw materials in the country. However, glandular preparations are, undoubtedly, needed and to meet the requirements of them, import is required. During 1955, 264.8 mega units of Insulin were imported valued at Rs. 18,66,646.

Study of the conditions of the slaughter-houses in Bombay and Delhi showed that position of these slaughter houses is not so convenient for collecting endocrinic raw materials. Slaughtering of animals is carried

out by hand in unsuitable buildings without water supply, sewerage and electric lines and other elementary industrial installations. But in spite of this, there is possibility of collecting hypophysis (pituitary) after some additional measures such as setting up small refrigerators at big slaughter houses, construction of rail coach refrigerators are fulfilled. The collection of animal glands in all big slaughter houses can be organised and this will enable collection of endocrinic raw materials from half the total number of animals slaughtered in the country.

The quantity of glandular preparations which can be obtained from these raw materials is calculated in Table V. But these calculations are carried out on the basis of the standards of endocrinic raw materials collected in the Soviet Union (because of non-availability of similar data in India) but as the quality of endocrinic raw materials in India can considerably differ from those in the USSR, these quantities should be considered as very provisional, which should be defined more precisely after the analysis of the endocrinic raw materials of India is made.

Glandular Products :

It is recommended in the first stage to set up the production of preparations on the basis of hypophysis. There are the following suitable conditions for this :

1. Cattle slaughtering in big slaughter houses is being made in the shortest period of time (2-4 hours) and in quite sufficient quantities (amounting in some days to 5,000 heads of sheep). It makes considerably easier the collection of hypophysis.
2. The period from cattle slaughtering till extraction of hypophysis lasts about 7.5 minutes (according to datas of Dr. H.R. Nanji) i.e. short enough for preserving its quality.
3. Storing and transportation of hypophysis can be made in acetone in hermetically sealed containers. It can be done so because the collection of hypophysis per day at the slaughtering of cattle is only of about 2.5 kg. the most.

The small volume of this raw material makes it possible to organise its processing and obtaining of adrenocorticotropic hormone (A.C.T.H.) even under the laboratory conditions. For this purpose the Haffkine Institute in Bombay can be recommended to organise production, because there is almost all necessary equipment to carry out the technological process, including biological standardisation. No considerable capital investments are needed. The Institute has specialists to handle this work.

1. The provisional scale of production is :—
 1. The floor space (without laboratories and auxillary rooms) is of about 150 sq. meters.
 2. Equipment :—
 - (i) Hypophysis grinder.
 - (ii) Settling centrifuge.

- (iii) Sublimation dryer.
- (iv) Refrigeration unit of 20,000 Cal/hour.
- (v) Glass lined reactors—8-10 pcs. of 50 to 500 lit. each with total capacity of about 2400-3000 lit. each.
- (vi) Rectification column for acetone with the rated capacity of 25 lit. per hour.

At the same time, it is necessary to set up at the Haffkine Institute a research laboratory of glandular products.

The immediate tasks of this laboratory will be :—

1. To determine yields of drugs made out of various glandular raw materials.
2. To work out most rational methods of production of glandular products under Indian conditions.
3. To work out methods of most complete preservation of active substances in glandular raw materials (rapid extraction, the selection of better methods of preservation—freezing, drying at low temperatures, etc.)

II. In order to carry out the production of glandular products from other kinds of animal raw materials, it is necessary to effect the following measures :—

1. To set up cold storage with capacity (800 cu. meters) at the big slaughter houses consisting of freezing room (-25° to -30°C) and storage room for glandular raw materials (-10° to -15°C)
2. To buy some refrigerated cars to transport glandular raw materials to the places of their processing.
3. To build a unit at the projected slaughter house in Bombay to produce glandular products.

In order to organise the production of glandular products, it is recommended to build a two storeyed building with a total floor space of about 1600 sq. meters and constructional volume of about 8000 cu. meters.

III. Recommended capacities for production of Basic antibiotics, synthetic drugs and vitamins etc. by the Russian delegation.

S. No.	Name of drug.	Unit	Estimate of Indian organisations		Estimate of the Soviet experts			
			Ministry of Commerce & Industry	State Planning Commission	Proposed Estimate	Difference against estimates of Min. of Commerce & Industry (Col. 4)	Including	
1	2	3	4	5	6	7	8	9

IV. *Glandular Products*

(Provisionally until investigations of content of active substances of animal glands are done.)

1. ACTH	1000 units	...	8,500	+	8,500	8,500	...
2. Prolactine	„	...	50	+	50	50	...
3. Pituitrin-umsiccum	k.g.	...	26	+	26	26	...
4. Insulin	m.u.	...	88	+	88	...	88
5. Lipocaine	1000 units	...	18,500	+	18,500	...	18,500
6. Cortine	„	...	200	+	200	...	200
7. Pepsin Medical	Tons	—	10	+	10	...	10

(ix) *Extract from "The Tanner" Vol. 10 March 1958, No. 10*

"Slaughter-Houses of Germany"

By A. P. PALIT.

I had the opportunity of visiting two slaughter-houses in Germany one of them practising modern method of flaying. I am describing here a few important features which are worthy of consideration in respect of our slaughter-houses.

The most striking feature is the complete absence of ravens, crows, flies etc. which, by contrast, single out the slaughter-houses of our country. The cold climate of course, helps a good deal in keeping these predators away, but nevertheless, sufficient sanitary and other measures are taken to prevent their presence and ensure cleanliness. Flushing of the floor and walls with water, excellent drainage system and spraying frequently with disinfectants are some of the steps taken in this direction. The walls are lined with enamelled clay tiles and the floor is of cement concrete without a pit anywhere to deposit water or filth.

Very little work is done on the floor except killing. Killing is done by means of a gun. Slaughter by knife has been discontinued since Nazi regime. The gun costs about Rs. 75 and each shot about two annas. After they are killed, the animals are lifted by pulley blocks, if they are large such as cows or horses, or by hand if small, to sliding hooks on overhead rails and then they are flayed. Flayers are appointed by the management after sufficient test and they work on weekly wages and not on piece rate. Flaying on piece rate which is done in some of our slaughter-houses leads to cutting of the hides, due to haste.

Large animals are flayed with electric rotary knives and small animals with hand knives. Electric knives from England were operating in one slaughter-house while in the other, German knives are similar in

principle and consist of two toothed discs rotating swiftly against each other. The tooth is not sharp enough to cut the hide, only its motion separates the hide from the body. It takes about 7 minutes for two workers to flay an animal with two knives. Hides flayed with the electric knife are given special marks and fetch 64% higher price than those flayed by hand knives.

Immediately after flaying, the hides are taken to another hall where they are first cleaned from adhering flesh, trimmed, weighed and marked with a ticket to show the green weight and quality. They are then thrown to the collet which is just underground. Here they are cured with salt and stored. The whole operation after flaying takes only about 15 minutes. Sale of the hides is effected once every month through auction in cities like Stuttgart and Cologne where only the papers relating to the hides from different slaughter-houses describing the quality, weight, etc. are shown to the intending purchasers but the hides are not carried there.

There are cold storages attached to the Slaughter-houses which the butchers can use on rent for storing the meat. There are also smoking chambers for ports. Besides these facilities, there are also arrangements for (1) collecting the blood and processing it to make plasma, blood albumen, (2) collecting the fat and refining it, (3) manufacture of sausages and (4) refining the guts. A sale depot for various tools and equipment for the butchers and meat shops constitutes another section of the slaughter house. There is also a canteen attached to it.

To give an idea about the volume of work, in one of the slaughter-houses, about 400 cows and horses and 2000 swine are killed every week. Apparently we have slaughter-houses in our country which deal with as large a number of animals, but in most cases, hides and skins produced in these slaughter-houses belong to individual butchers and pass through middlemen who sell the hides before the animal is killed; that is, the price of the hide is settled and advance payment received on the condition that the hide will be supplied when the animal is killed. This lead to various price speculations on the one hand and indifference in the proper upkeep of the hide on the other. Seldom, salt is applied so promptly in our country as in Germany, although our climate calls for immediate curing operations.

(x) Note dated the 13th August, 1956, by Dr. D. Pattabhiraman
Director of Animal Husbandry, Madras.

Working of the flaying scheme in Madras State.

Introduction : The Committee on Leather and Leather goods Industry appointed by the Government of India in 1947 in paras 13-15 of its report, emphasised the importance of proper flaying due to the fact that about 20 lakhs of Rupees were lost to the State through faulty flaying and recommended the starting of a Flaying School and licensing of flayers. The Local Government were anxious that better flaying methods should be adopted in the Madras State to improve the art of flaying, as they would produce quality hides and skins for the industry and export trade which was very considerable. They, therefore, approved

the scheme drawn by the Director of Animal Husbandry, Madras in their Order Ms. No. 3765, Development, dated 28-8-52, to start a Flaying School in the Madras Veterinary College for the training of professional flayers and also Veterinary Assistant Surgeons who in turn would train flayers in the mofussil. This scheme envisages training of 12 Veterinary Assistant Surgeons and 60 professional flayers (both butchers and new recruits) in Madras and 40 men (both butchers and new recruits) in the mofussil annually with the co-operation of Municipal institutions. The new recruits undergoing the course have to be paid a stipend of Rs. 25 each per month while the professional butchers, Rs. 10 each per mensem.

Course : The course is spread over a period of three months and the candidates seeking admission to the course should be able to read and write one of the regional languages and should be above 18 years of age.

Opening of the school : Though the Lecture in Flaying and the Assistant Lecturer in Flaying were appointed in February 1953, the regular working of the flaying school actually commenced from 1-11-53 on the return of the teaching staff from training under Mr. F.H. Hock, F.A.O. Expert in Flaying in the Hide Flaying and Curing Centre, Bakshi-Ka-Talab, Lucknow, U.P. for a period of two months.

Result achieved :—Two batches of students numbering 44 were trained in the year 1953-54. In the year 1954-55, 3 batches of students consisted in all 8 butchers and 49 amateurs were trained while in the year 1955-56, 3 batches consisted in all 7 butchers and amateurs. Thus from the inception of the Flaying School at Madras upto end of the year 1955-56, 35 butchers and 125 amateurs, in all 160 were trained as professional flayers. In addition, 7 Veterinary Assistant Surgeons were also trained in the art of flaying while undergoing the Refresher Course at the College in the year 1953-54. It is obvious that this Flaying course is run very satisfactorily in the Madras Veterinary College.

Working of the Auxiliary Flaying Centres :—At the first instance 2 auxiliary flaying centres, one at Coonoor and the other at Tiruchirapalli were opened in the year 1954-55. Subsequently orders were also issued for opening of 5 more centres in the following places, viz. (1) Mangalore, South Kanara District, (2) Tirupathur, North Arcot District, (3) Madurai City, Madurai District, (4) Tuticorin, Tirunelveli District, and (5) Nagapatnam, Tanjore District. The working of these centres, is as shown hereunder :—

1. *Coonoor Centre* :—This centre was started on 1-7-54 and in all 35 candidates were trained in 6 batches. For want of candidates it is said that this centre has been closed and it is proposed to open a centre in another suitable place in the district of Coimbatore.

2. *Tiruchirapalli Centre* :—This centre was opened on 1-8-54 and in all 33 students were trained in 4 batches. This centre also stands closed from 1-11-55, it is said, for want of candidates. It is proposed to open a centre at Karur from 1-5-56.

3. *Mangalore Centre* :—Only 5 students in two batches were trained in this centre which was opened on 1-6-55. This centre had to be closed for want of sufficient number of trainees.

4. *Tirupathur Centre* :— Though this centre was opened on 14-5-55, it had to be closed on 10-6-55, it is said, for want of candidates. It is proposed to give necessary training to a Veterinary Assistant Surgeon working in the North Arcot district and open a centre at Vellore.

5. *Tallakulam (Madurai) Centre* : This centre was started on 25-4-55 and in all 11 students in two batches were trained. This centre had to be closed on account of the transfer of the Veterinary Assistant Surgeon in charge of this centre to Madurai city. A centre will be opened in Madurai city shortly.

6. *Tuticorin Centre* :— This centre was opened on 1-5-55 and in all 15 students are under training from 1-2-56.

7. *Tanjore Centre* :— This centre was not so far opened for some reasons or other by the District Veterinary Officer, Tanjore.

Difficulties confronting proper working of these centres and remedies suggested :

1. Due to acute shortage of Veterinary Assistant Surgeons in the Department, it is not possible to depute more number of Veterinary Assistant Surgeons for further training in flaying so that more centres can be opened in the districts.

2. For want of suitable employment for the certified flayers who undergo the course the auxiliary centres in the district do not get sufficient number of candidates for training, and if the objects of the flaying scheme are to be achieved in full, legislation to insist upon only licensed and certified butchers to be permitted in the slaughter houses should be enforced.

About 252 candidates have been trained made up of 116 in Madras and 102 in the mofussil. Majority of the men are left unabsorbed for the work they are trained. This situation seems to be a loss in view of the fact that the State has trained these men on some expenditure. These men are not contributing towards the importance of flayed hides and skins. In the circumstances, time has come to see that Government be moved to insist upon licensed flayers in all the slaughter-houses and to take measures to absorb these trained men.

Suggestion for Improvement :

1. It is proposed to give a short training to as many Veterinary Assistant Surgeons as possible for a period of about 10 days in the Madras Veterinary College so that these men in turn can organise suitable centres within their jurisdiction for training sufficient number of scientific flayers.

2. It is proposed to address the additional Development Commissioner to permit all the Extension Officers in the various blocks to undergo the short term training with a view to organise flaying centres in each block to train the chamars in the art of faultless flaying.

3. Government will be addressed to introduce legislation to permit only certified flayers in the slaughter houses in future.

APPENDIX X

QUESTIONNAIRES ISSUED BY THE COMMITTEE

1. Questionnaire relating to slaughter-houses etc.

Name of city.....

1. Do you have any licensing system for slaughter-houses in your area?
2. If the answer is in the affirmative, what is the number of licensed slaughter-houses and the requirements for licensing?
3. Number of slaughter-houses and their names, and number of animals of each species slaughtered in each slaughter-house during the year 1954 and 1955.

No.	Name	Year	Goats	Sheep	Cattle	Buffaloes	Pigs
1.		1954- 1955					
2.		1954- 1955					
3.		1954- 1955					
4.		1954- 1955					
5.		1954- 1955					
6.		1954- 1955					

4. Give a description of the method employed in slaughtering the animals, including the Muslim, Jewish and other methods.
5. What are yours views on the introduction of humane slaughter* from the point of view of feasibility and execution?

*Humane slaughter is a method to prevent avoidable pain, fear and suffering and to cause death after the animal has been rendered unconscious.

6. Are there any provisions for examination of the animals and the carcasses before and/or after slaughter?
7. Is ante-mortem or post-mortem examination carried out? Is there any procedure laid down under the by-laws for carrying out ante-and post-mortem examination? (A copy of rules may be enclosed).
8. Are the officers entrusted with ante- and post-mortem examination qualified veterinarians?
9. Number of officers posted at each slaughter-house?
10. Number of animals each officer is required to inspect?
11. Are animals rejected on ante-mortem examination branded?
12. Number of organs and carcasses condemned during the year 1954 and 1955.
13. What are the slaughtering fees per animal? *Sheep, Goat, Cattle, Buffalo & Pig.*
14. Have you any control over the supervision of arrangements for the housing and feeding of the animals before slaughter?
15. Do you employ any staff for the supervision of slaughter-house, and if so, can the same staff be employed to see that humane slaughter methods are enforced?

Have you a law for prohibiting the slaughter of pregnant animals, milch animals, animals below ten months of age and animals extracted from the womb? If so, is it properly enforced? Suggest improvements.

16. Are there any cold-storage attached facilities to the slaughter-house?
17. Time taken between killing and flaying of animal.
18. How many shifts are there for slaughtering?
19. Duration of each shift.
20. Are flayers licensed?
21. Number of flayers working in each slaughter-house?
22. Time taken to flay sheep, goat, buffalo and cattle?
23. Are slaughter-houses fitted with conveyor pulleys?
24. Are flayers paid monthly or per animal? Give rates.
25. Are there any arrangements for collection of glands for preparation of glandular products?
26. Name of the glands and quantity annually collected.

27. Have you any suggestions for improving the supply of animal glands and organs for the manufacture of hormones and glandular products ? Please attach a note.
28. Are the guts cleaned for making animal casings for sausages for export ?
29. How is the blood disposed of ?
30. Is the present slaughter-house big enough to meet the demand of the city and handle slaughtering economically and efficiently ?
31. Are there any proposals for shifting the present slaughter-house to a new site ?
32. What are the estimates for constructing and equipping a new slaughter-house ?
33. What is the total annual income derived from each slaughter-house ?
34. Total annual expenditure on each slaughter-house.

II. Questionnaire for the Pharmaceutical Firms.

1. Name of the Firm.
2. Names of various glandular preparations manufactured indicating the quantity against each per annum.
3. Annual requirements of each of the glands.
4. Source of supply of the raw material.
5. Are the arrangements for collection of glands satisfactory from your source of supply, if not from local slaughter-house ?
6. What difficulties are you experiencing in the collection of the same.
7. Give suggestions for improving supply of animal glands and organs for the manufacture of hormones and, glandular products (a detailed note may be given).
8. Do you import any raw glands from abroad for manufacture of glandular products ? Give quantity and value for the year 1954 and 1955 ?
9. Any comment or information that you may like to convey to the Committee regarding the quality of the raw material that you may need, dealing with each of the gland separately.

APPENDIX XI—Statistics

STATEMENT I

NAMEs OF TOWNS AND CITIES SHOWING RANGE OF CATTLE AND BUFFALOS SLAUGHTERED DURING 1954.

upto 2,000	2,001—5,000	5,001—10,000	10,001—15,000	15,001—20,000	20,001—50,000	50,000 and above
I	2	3	4	5	6	7
I. Akola	I. Arrah	I. Allahabad	I. Bareilly	I. Ahmedabad	1. Aligarh (42,673)	1. Bombay (78,909)
2. Akot	2. Bhopal	2. Hubli	2. Darbhanga	2. Garden Reach	2. Agra (20,615)	2. Calcutta (57,736)
3. Alleppey	3. Burhanpur	3. Janshahpur	3. Kanpur	3. Saharanpur	3. Delhi (21,819)	(Tangra Sl. House only)
4. Budge-Budge	4. Chaitasa	4. Jabolpur	4. Moradabad	4. Rampur	4. Hyderabad (29,620)	
5. Bhavnagar	5. Cuttack	5. Lucknow	5. Meerut	5. Ranchi	5. Madras (25,829)	
6. Balapur	6. Gorakhpur	6. Poona	7. Junagadh	7. Poona		
7. Belgaum	7. Junagadh	8. Kolhapur	8. Tiruchirapalli	9. Kurseong		
8. Coimbatore	9. Koshikode	10. Madurai				
9. Chanda						
10. Ernakulam						
II. Faizabad						

STATEMENT I—(Contd.)

1	2	3	4	5	6	7
12. Gauhati	12. Mangalore					
13. Gaya	13. Patna					
14. Kalimpong	14. Surat					
15. Kottayam	15. Trivandrum					
16. Murshidabad	16. Trichur					
17. Muratajapur	17. Vellore					
18. Nowgong (Assam)	18. Varanasi					
19. Port Blair						
20. Quilon						
21. Rajkot						
22. Sholapur						
23. Suri						
24. Salem						
25. Tanjore						
6. Wa shim						



STATEMENT 2
NAMES OF TOWNS AND CITIES SHOWING RANGE OF SHEEP AND GOATS SLAUGHTERED DURING 1954.

upto 5,000	5,001-10,000	10,001-20,000	20,001-50,000	50,001-100,000	100,001 & above
1	2	3	4	5	6
1. Akot	1. Akola	1. Aligarh	1. Agra	1. Coimbatore (63,421)	1. Ahmedabad (1,70,690)
2. Budge-Budge	2. Alleppey	2. Ambala	2. Amritsar	2. Jaipur (83,123)	2. Bangalore (3,18,648)
3. Balurghat	3. Burhanpur	3. Arrah	3. Allahabad	3. Jodhpur (50,425)	3. Bombay (11,25,267)
4. Ballarpur	4. Bikaner	4. Amravati	4. Burdwan	4. Jamshedpur (53,506)	4. Calcutta (1,04,289)†
5. Bhatapara (M.P.)	5. Champdauy	5. Bankpura	5. Bally	5. Kanpur (84,702)	5. Delhi (4,25,966)
6. Bhandara	6. Chander-nagore	6. Belgaum	6. Bhadreswar	6. Baroda	6. Hyderabad (2,99,454)
7. Balapur	7. Cooch-Behar	7. Bhavnagar	7. Bhatpara (West Bengal)	7. Bareilly	7. Lucknow (1,33,420)
8. Betul	8. Datia	8. Bhopal	8. Baroda	8. Sholapur (58,315)	8. Madras (4,61,378)
9. Chhatarpur	9. Dhanbad	9. Faizabad	9. Bareilly	9. Cuttack	
10. Chaiabasa	10. Ferozepore	10. Kozhikode	10. Meerut	11. Darbhanga	
11. Chamba		11. Hoshiarpur	11. Meerut	12. Dehra Dun	
12. Chanda	12. Jannagar	12. Moradabad			

*Figures for Calcutta Corporation relates to Tangra Slaughter-house only.

STATEMENT 2—(Contd.)

1	2	3	4	5	6
13. Dhatar	13. Karnal	13. Quilon	13. Gaya	8. Varanasi*	9. Madurai (1,22,146)
14. English-Bazar	14. Konnagar	14. Simla	14. Gorakhpur	9. Vellore (32,106)	10. Nagpur (1,04,822)
15. Ernakulam	15. Kottayam	15. Trichur	15. Gwalior	11. Poona (1,45,608)	12. Tiruchira-Pappali (1,51,022)
16. Gauhati	16. Midnapore	16. Trivandrum	16. Hubli	17. Indore	
17. Gauhati	17. Mangalore	17. Ujjain	17. Jabalpur	18. Jullundur	
18. Gondia	18. Mercara	18. Mercara	18. Jajalpur	19. Kolhapur	
19. Hooghly-Chinsurah	19. Patna	19. Patna	19. Ludhiana	20. Ranchi	
20. Jangipur	20. Ranchi	20. Ranchi	20. Kolhapur	21. Jullundur	
21. Jhaganj-Azimganj	21. Raipur	21. Raipur	21. Ludhiana	22. Patiala	
22. Junagadh	22. Saharanpur	22. Saharanpur	22. Patiala	23. Salem	
23. Jorhat	23. Virajpet	23. Virajpet	23. Salem	24. Tanjore	
24. Khandwa				25. Udaipur	
25. Kurseong					
26. Kalimpong					
27. Kandi					

*Figure for two slaughter-house only.

STATEMENT 2—(Contd.)

1	2	3	4	5	6
28. Mandi					
29. Mandvi					
30. Multai					
31. Murtajapur					
32. Murshidabad					
33. Nowgong (Assam)					
34. Nowgong (M.P.)					
35. Nahan					
36. Port-Blair					
37. Patni					
38. Rewa					
39. Raigarh					
40. Rajkot					
41. Rohtak					



STATEMENT 2—(Contd.)

1	2	3	4	5	6
42. Rajpur					
43. Ranaghat					
44. Shahdol					
45. Shillong					
46. Suri					
47. Solan					
48. Tikamgarh					
49. Tambuc					
50. Tunesar					
51. Titagarh					
52. Washim					
53. Warora					



STATEMENT 3

ESTIMATED EXPENDITURE FOR CONSTRUCTION AND EQUIPPING
NEW SLAUGHTER-HOUSES

State	No. of Sl. houses reported upon	No. of Sl. houses proposed to be shifted to new sites	Expenditure estimated by States for constructing & equipping new Sl. Houses	Detail of estimates
				Rs.
Punjab	13	5	40,000	Estimates for 3 slaughter houses only
Madras	18	4	2,63,000	1 Sl. House to cost Rs. 60,000 1 Sl. House to cost Rs. 40,000 2 Sl. Houses when converted into a new Sl. House to cost Rs. 1,63,000 Total Rs. 2,63,000
Himachal Pradesh	31	9	2,38,800	6 Sl. Houses to cost Rs. 60,000 1 Sl. House to cost Rs. 25,000 1 Sl. House to cost Rs. 1,53,800 Total Rs. 2,38,800 (Estimate for 1 Sl. House is not available)
Andaman & Nicobar Islands	1	1	12,730	—
Tripura	1	—	—	—

STATEMENT 3—(Contd.)

State	No. of Sl. houses reported upon	No. of Sl. houses proposed to be shifted to new sites	Expenditure estimated by States for constructing & equipping new Sl. Houses	Detail of estimates	
				Rs.	
Kerala	9	5	16,000	3 Sl. Houses when converted into a new modern Sl. House will cost Rs. 16,000	Estimates for 2 Sl. Houses is not available.
Mysore	12	3	25,000		Estimates for 1 Sl. House only
Bihar	16	3	40,000	1 Sl. House to cost Rs. 10,000 2 Sl. Houses when converted into one modern Sl. House to cost Rs. 30,000 Total Rs. 40,000	
Uttar Pradesh	47	18	3.35,000	1 Sl. House to cost Rs. 20,000 1 Sl. House to cost Rs. 40,000 2 Sl. Houses when converted into one modern Sl. House to cost Rs. 2,00,000 5 Sl. Houses to cost Rs. 75,000 Total Rs. 3,35,000	

STATEMENT 3—(Contd.)

States	No. of Sl. houses reported upon	No. of Sl. houses proposed to be shifted to new sites	Expenditure estimated by States for constructing & equipping new Sl. Houses	Detail of estimates	
				Rs.	
West Bengal	148	4	75,000	1 Sl. House to cost Rs. 10,000 1 Sl. House to cost Rs. 5,000 1 Sl. House to cost Rs. 60,000	 Total Rs. 75,000 Estimates for one Sl. house is not available.
Assam	20	8	55,000	2 Sl. Houses to cost Rs. 5,000 6 Sl. Houses when converted into new modern Sl. Houses to cost Rs. 50,000	 Total Rs. 55,000
Delhi	4	4	40,00,000	—	
Bombay	51	20	1,53,57,225	7 Sl. Houses when converted into new modern Sl. houses to cost Rs. 1,50,00,000 1 Sl. House to cost Rs. 2,45,000. 1 Sl. House to cost Rs. 5,000 3 Sl. Houses to cost Rs. 50,000 2 Sl. Houses to cost Rs. 35,000 2 Sl. Houses to cost Rs. 22,225	 Total Rs. 1,53,57,225

STATEMENT 3—(Contd.)

States	No. of Sl. houses reported upon	No. of Sl. houses proposed to be shifted to new sites	Expenditure estimated by States for constructing & equipping new Sl. Houses	Detail of estimates
				Rs.
Himachal Pradesh	4			No information received.
Rajasthan	8			No information received.
Andhra Pradesh	55			No information received.
Orissa	3			No information received.



STATEMENT 4

SHOWING INCOME AND EXPENDITURE OF SLAUGHTER HOUSES
AS REPORTED

S. No.	States	No. of Sl. houses repor- ted	Income	Expenditure	Deficit or surplus
1	W. Bengal	148	3,16,400	1,13,632	+ 2,02,768
2	Bombay	48	11,97,930	5,91,576	+ 6,06,183
3	Uttar Pradesh	45	1,49,515	85,150	+ 64,365
4	Madhya Pradesh	31	46,536	43,751	+ 2,785
5	Assam	20	2,952	1,173	+ 1,779
6	Madras	18	3,13,691	91,393	+ 2,22,298
7	Bihar	16	32,056	26,467	+ 5,589
8	Mysore	12	62,796	48,105	+ 14,691
9	Kerala	9	51,265	7,108	+ 44,157
10	Rajasthan	8	50,388	21,000	+ 29,388
11	Punjab	14	41,784	29,622	+ 12,162
12	Andhra Pradesh	5	1,13,041	20,594	+ 92,447
13	Himachal Pradesh	4	2,921	3,500	- 579
14	Orissa	3	3,500	3,500	-
15	Tripura	1	1,400	500	+ 900
16	Andaman & Nicobar Islands	1	270	--	+ 270
17	Delhi	4	1,28,968	63,406	+ 65,562

STATEMENT 5

ANNUAL REQUIREMENTS OF ANIMAL GLANDS AND BY-PRODUCTS IN
DIFFERENT STATES

S. No.	Name of the city where glandular products are manufactured	Name of glands etc.	Annual requirements
1	Calcutta	1. Liver 2. Pancreas 3. Gall bladder 4. Pig stomach 5. Pituitary 6. Ovaries 7. Testes 8. Prostate 9. Thyroid 10. Adrenal 11. Spinal cord 12. Heart	900 md. 70 md. 1,00,000 md. 3,800 md. 74,000 md. 2,37,000 md. 1,450 md. 1,200 md. 50,800 md. 5,450 md. 30 md. 160 md.
2	Bombay	1. Liver 2. Pancreas 3. Brain 4. Pituitary 5. Heart	18,300 md. 110 md. 37 md. 27,512 md. 40,000 md.
3	Bangalore	1. Liver	280 md.

Note :—Requirements of one Calcutta firm not included.

STATEMENT 6

STATEMENT SHOWING QUANTITIES AND VALUE OF GLANDULAR PRODUCTS
AND HORMONES, IMPORTED DURING 1955 AND 1956.*

S. No.	Item	1955		1956	
		Quantity	Value Rs.	Quantity	Value Rs.
1	Insulin	20.947 M.U. 44660 Units	9,19,602	275.79 M.U.	16,82,016
2	A.C.T.H.; Cor- tisone & Hydro- cortisone	5.349 kg.	6,22,295	8,77,520 Units 63.13 kg.	15,51,614
3	Thyroid	—	20,667	253 kg.	35,038
4	Adrenaline and its salts, includ- ing Prepara- tions.	30.234 lb	45,323	3.5 kg.	70,986
5	Pituitary powder	1.85 lb	9,061	15.5 kg.	11,442
6	Pituitary Extract	112.646 litres	1,21,759	101 litres	1,09,059
7	Testosterone propionate	4.078 kg.	1,18,456	37.65 kg.	4,74,232
8	Oestradiol B.P.C.	0.24 kg.	38,171	4 kg.	1,34,960
9	All other hor- mones	6.724 kg.	2,13,013	314 kg.	15,66,658
10	Liver Extract crude	497.09 litres	2,10,555	3,217 litres	3,86,350

*Information received through the courtesy of Director General of Health Services, Government of India, New Delhi.

Note :—The above are only approximate figures and may be taken as the present level of consumption.

Total value for 1955 = Rs. 23,18,902.

Total value for 1956 = Rs. 60,22,355.

APPENDIX XII

Model rules for meat inspection and for the inspection of slaughter houses and their regulation.

PART I.—Definitions

- I. In these Rules unless the context otherwise requires :—
 - (i) "Animal" includes any horses, mare, gelding, pony, foal, colt, filly, stallion, ass, donkey, mule, bull, cow, bullock, heifer, calf, steer, ox, sheep, lamb, ewe, whether ram, pig, boar, hog, sow, goat or kid ;
 - (ii) "Butcher" means the person producing or dealing with meat intended for human consumption ;
 - (iii) "Carcasses" means the carcasses of animals mentioned in clause (i) ;
 - (iv) "Cattle" includes a bull, cow, ox, heifer, calf, steer, bullock, or buffalo ;
 - (v) "Condemned" means that carcasses, parts or organs so marked unfit for food of man and shall be destroyed for food purposes;
 - (vi) "Halal" means the meat prepared according to the religious rites of Mohammedans ;
 - (vii) "Jhatka" means the meat prepared according to the religious rites of Sikhs ;
 - (viii) "Local Authority" means the Council, Committee, Corporation, or panchayat of a municipality, Notified Area, Small Town, or any other local area ;
 - (ix) "Meat" means flesh or other edible parts of an animal which is sold or intended for sale for human consumption ;
 - (x) "Meat Inspector" means the Medical Officer of Health, or Veterinary Surgeon or any Officer appointed by a local authority and vested with the power to inspect and examine meat intended for human consumption ;
 - (xi) "Medical Officer of Health" means any duly qualified Medical practitioner appointed or employed by a local authority or a local Government to act in that capacity.
 - (xii) "Nuisance" includes any act, omission, place or thing which causes or is likely to cause injury, danger, annoyance or offence to the sense of sight, smell or hearing, or which is or may be dangerous to life or injurious to health or property ;

- (xiii) "Public Street" means any street—
 - (a) over which the public have a right of way ; or
 - (b) heretofore levelled, paved, metalled, channelled, sewer'd, or repaired out of municipal or other public funds.
- (xiv) "Slaughter hall" means the actual place where the animals are slain ;
- (xv) "Slaughter-house" means any building, premises, or place used in connection with the business of killing and slaughtering animals intended for human consumption. For the purpose of these rules a slaughter-house may be either a public slaughter house maintained by the local authority or a private slaughter-house duly licensed for the purpose of slaughtering animals ;
- (xvi) "Slaughter-man" means the person who slaughters the animals and dressed the carcasses ;
- (xvii) "Veterinary Surgeon" includes any duly qualified Veterinarian appointed or employed by a local authority or a local government to act in that capacity.

PART II. Private and public slaughter-house

2. In localities where one or more slaughter-houses are present, or such that are to be established by local laws, there shall be prohibited—

- (a) the establishment of new private slaughtering places ;
- (b) a further use of existing private slaughtering places, unless such places are constructed in accordance with the sanitary requirements laid down in Part III of these rules.

3. A local authority may provide, establish, improve, or extend and maintain within or without their area and two or more local authorities may combine to provide, establish, improve or extend and maintain, one or more public slaughter-houses constructed in accordance with the sanitary requirements laid down in Part III of these rules.

4. In localities where one or more public slaughter-houses that do not conform to the sanitary requirements laid down in Part III of these rules, are present, the local authorities concerned shall make necessary provisions for any changes, extensions or improvements that are in accordance with the aforesaid sanitary requirements. For this purpose a certain percentage of the income from slaughter houses may be set apart as a reserve and used for extension and improvements or as an alternative local authorities may advance loans as and when required, up to a certain percentage of the income realised from the slaughter-houses.

5. In a local area the slaughter-houses for the slaughter of—

- (a) cattle,
- (b) sheep and goats (Halal), and
- (c) sheep, goats and swine (Jhatka),

and the preparation of meat thereat shall not be within 100 yards of each other.

PART III. Site, structure and sanitary requirements of slaughter-houses

6. The premises to be erected or to be used and occupied as a slaughter-house shall not be within 300 feet of any dwelling house or building frequented by the public, and the site shall be such as to admit of free ventilation by direct communication with the external air on at least two sides of the slaughter-house.

7. The slaughter-house shall not in any part be below the surface of the adjoining ground.

8. The approach to the slaughter-house shall not be on an incline of more than one in four, and shall not be through any dwelling house or shop. Any door of the slaughter-hall or cooling room shall not open directly into any street or lane or other public place, and shall not be so situated that the slaughtering of animals can be seen from any public place, situated street or from any adjacent dwelling house, or occupied place outside the slaughter house. A sign board marked 'Registered slaughter-house' or 'Licensed slaughter-house' shall be placed in front of the building or place used for slaughtering.

9. Every slaughter-hall or cooling or cooling-room shall be covered with a proper roof, and no habitable room or loft shall be constructed over the slaughter house and lairs, pens or stables in connection with the same.

10. Lairs, pens or stables which should be provided for food animals awaiting slaughter in connection the slaughter-house shall not be within 100 feet of a dwelling place or building frequented by the public; and they shall be properly paved, drained, ventilated and lighted, and water-supply in them should be convenient and adequate for animals awaiting slaughter.

11. No lair or stable in connection with the slaughter-house shall be so situated or constructed that animals within it may be able to see into any slaughter hall or cooling room.

12. The water-supply shall be ample, clean and potable, with adequate facilities for its distribution in the slaughter-house. In addition, the slaughter-house shall be provided with an adequate tank or other proper receptacle for water having a water-tap to which a hose can be readily attached, so placed that the bottom shall not be less than 6 feet above the level of the floor of the slaughter house.

13. The slaughter-house shall be provided with means of thorough ventilation and abundant light, both natural and artificial. All doors and windows shall be provided with fly proof shutters.

14. The slaughter-house shall be well paved with rough cement concrete or other non-slippery impervious material, and laid with proper slope and channels running towards one or more gullies (which shall be properly trapped and covered with a grating, the bars of which shall not be more than three-eights of an inch apart) placed immediately outside

the slaughter hall or cooling room to allow of the floor being flushed and drained. The corners of the walls and floors shall be rounded off to prevent the collection of dirt and dust.

For non-sewered towns a cesspool or pit, constructed of non-absorbent material, shall be provided outside the building for the collection of slaughter-house refuse only.

15. The surface of the walls in the interior of the slaughter-house shall be covered with hard, smooth and impervious material to a height of at least 6 feet. White-washing of the walls shall be done at least once in six months.

16. No water-closet, privy or cesspool shall be constructed within the slaughter-house. There shall be no direct communication between the slaughter-house and any stable, water-closet, privy or cesspool except that which is provided for the collection of the slaughter-house refuse.

17. Every practicable precaution shall be taken to keep the slaughter-house free from flies, carrion, rats, mice and other vermin. The use of poisons and rat-viruses for any purpose in rooms or compartments within the slaughter-house premises where meat or meat products are stored or handled shall be forbidden.

18. Every slaughter-house shall be provided with properly located facilities for disinfecting and cleaning utensils, hands and instruments, etc., of all persons handling any meat or meat products.

PART IV. Regulation of Slaughter-houses.

19. A person, firm, corporation or any officer or agent of any such person, firm or corporation, carrying on the business of a slaughterer of animals shall not use any premises as a slaughter-house without a licence from the local authority.

20. No person shall slaughter or cause or permit to be slaughtered at any place other than a public slaughter-house or premises licensed for the purpose of slaughtering, any four-footed animal the flesh of which may be used as human food.

Provided that this shall not apply for sacrificial slaughter, on the occasion of any festival or ceremony, of animals the flesh of which is not intended for sale ; and provided further that the slaughter of such animals shall not be carried out within the sight of public.

21. Every person who may apply to the local authority for a licence for the erection, use and occupation of any premises, as a slaughter-house shall furnish in Form A appended to these rules, a true statement of the particulars therein required to be specified.

22. Every person to whom the local authority may have resolved that a licence be granted to erect premises for use and occupation as a slaughter-house shall be entitled to receive from the said local authority a licence in Form B appended to these rules, or to the like effect.

23. A fee shall be charged by the local authority for granting every licence or renewal of licence for the erection, use and occupation of premises as a slaughter-house for a period of every 12 months.

24. Licences for the erection, use and occupation of premises as a slaughter-house shall be renewable after a period of every 12 months.

25. A public or a duly licensed slaughter-house shall be kept open for use by the butchers during the months of summer and winter between such hours each day as decided by the local authority from time to time and the working hours of the slaughter-house heretofore decided shall be conspicuously marked, painted or labelled suitably on or about the entrance gate of the slaughter-house.

26. Every owner or occupier of a slaughter-house shall at all reasonable times, afford free access to every part of such premises to the Veterinary Surgeon, Medical Officer of Health, Meat Inspector, or other person or persons specially authorised by the local authority, for the purpose of inspecting the condition of the premises and the manner in which the business is being carried on, and for examining any carcass or portion thereof, or any animal that may be found therein.

27. No person other than the Veterinary Surgeon, Medical Officer of Health, Meat Inspector, *bona fide* butchers or their assistants and servants, or any other person or persons especially authorised by the local authority as for example, persons, their staff and merchants duly authorised by them, who are interested in the grading and marking of hides, meat or other animals by-products shall enter the slaughter-house premises during the process of slaughtering, skinning, dressing or cutting up carcasses.

28. The owner or occupier of every slaughter-house shall cause every animal brought to such slaughter-house for the purpose of being slaughtered and confined in any pound, stall, pen, lair or stable upon the premises previously to being slaughtered, to be provided during such confinement with sufficient quantity of wholesome water; and, if confined for more than twelve hours, to be provided with a sufficient supply of food.

29. Suitable arrangements shall be made for the proper care and food of the animals while in the waiting yard by the owners or butchers at their own expenses or by the local authority at the expense of the owners or butchers.

30. The owner or occupier of every slaughter-house shall cause to be maintained, from day to day, a statement in a suitable record book or register showing clearly (a) the number and kind of animals received into the slaughter-house together with the names and addresses of the persons to whom the animals have been consigned, (b) class, age and sex of animal (c) names and addresses of persons to whom the animals are sold, *i.e.*, the butchers, (d) the fees recovered therefrom, and (e) results of meat inspection by the Meat Inspector, indicating grade if prescribed; and such a record book or register shall be open to the inspection of the Medical Officer of Health, Veterinary Surgeon, Meat Inspector or other person or persons authorised by the local authority in this behalf.

31. Every owner or occupier of a slaughter-house and every servant of such occupier and every other person employed upon the premises shall carry out the slaughtering work with as little pain or suffering to the animals as practicable, and shall use such instruments and appliances, adopt such methods and otherwise adopt such precautions as may be requisite to secure the infliction of as little pain or suffering as practicable; provided that this requirement shall not interfere with the religious susceptibilities of the persons engaged on the premises.

32. A person shall not, in the slaughter-house, slaughter, or cause or suffer to be slaughtered, any animal in view of another animal.

33. No animals other than those intended for slaughtering shall be allowed into the slaughter-house and no animal shall be kept in a slaughter-house for a longer period than may be necessary for preparing such animals for slaughter, and such period shall in no case exceed three days.

34. No animal which has been received into a slaughter-house for the purpose of being slaughtered, shall be removed from the slaughter-house before being slaughtered, except with the consent of the Meat Inspector, Veterinary Surgeon or the Medical Officer of Health.

35. No animal shall be slaughtered except inside a slaughter-hall booth meant for the purpose.

36. The owner or occupier of a slaughter-house shall provide adequate number of hangers or pulleys for hanging the carcasses and facilitating dressing of the slaughtered animals.

37. An owner or occupier of a slaughter-house shall not cause or allow any blood or other refuse to flow from the slaughter-hall so as to be within the sight of any animals in the slaughter-house.

38. No air shall be blown by the mouth or in any other manner into the tissues of any carcass or part of a carcass slaughtered or prepared for human consumption.

39. The means of ventilation, drainage and lighting of every slaughter-house shall be kept in good and efficient order to the satisfaction of the local authority.

40. Every owner or occupier of a slaughter-house shall cause the means of water supply provided in or in connection with such slaughter-house to be kept at all times, in proper order and efficient action as may be approved by local authority, and shall provide for use of the premises a sufficient supply of clean water for the purpose of thoroughly washing and cleaning the floor or pavement, every part of the internal surface of every wall of such slaughter-house, and every utensil, vessel or receptacle which may be used for the collection and removal from such slaughter house of any blood, manure, garbage, filth or other refuse products of slaughtering or the dressing of any carcass on the premises.

41 (a) Every owner or occupier of a slaughter-house shall provide a sufficient number of vessels or receptacles, properly constructed of

galvanized iron or other non-absorbent material, and furnished with closely fitting covers, for the purpose of receiving and conveying from such slaughter-house all manure, blood, garbage, filth, or other refuse products of the slaughter-house.

(b) All blood, manure, garbage, filth or other refuse from any animal slaughtered and the hide, fat, viscera and offal therefrom, shall be removed from the slaughter-house within 8 hours after the completion of the slaughtering of such animal, and in such manner and by such means as will not cause nuisance at the premises or in the public streets or elsewhere and as may be approved by the local authority.

(c) Every owner or occupier of a slaughter-house shall cause every such vessel or receptacle to be thoroughly cleansed immediately after such vessel or receptacle has been used for such collection and removal, and shall cause every such vessel or receptacle, when not in actual use, to be kept thoroughly clean.

(d) In a public slaughter-house any skin or entrails or offal, not removed within the allotted time shall become the property of the local authority and shall be disposed of by them in such manner as deemed fit, provided that if they so prefer, they may delegate to the officer in charge of the slaughter-house power to have such skins, entrails or offal removed at the owner's or butcher's expense and the officer in charge may refuse to such butcher or owner or his servant any subsequent admission to the slaughter-house until such expense is made good to the local authority.

42. (a) Every owner or occupier of the slaughter-house shall cause every part of the internal surface of the walls and every part of the floor and pavement of such slaughter-house to be kept at all times in good order and repair, so as to prevent the absorption therein of any blood or liquid refuse or filth which may be spilled or splashed thereon, or any offensive or noxious matter which may be deposited thereon or brought into contact therewith.

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(b) Every part of the internal surface above the floor or pavement of such slaughter-house shall be washed thoroughly with hot lime-wash at least once every three months.

(c) Every part of the floor or pavement of such slaughter-house, and every part of the internal surface of every wall on which any blood or liquid refuse or filth may have been spilled or splashed or with which any offensive or noxious matter may have been brought into contact during the process of slaughtering, dressing and cutting up in such slaughter-house, shall be thoroughly washed and cleansed within three hours after the completion of such slaughtering or dressing.

43. An owner of a slaughter-house shall not at any time keep any dogs, pigs or birds, or cause or suffer any dogs, pigs or birds, to be kept in or to have access to such slaughter-house. The open area in a slaughter-house shall be covered by wire rope netting to prevent carrion birds from carrying away the material and dropping it in the vicinity of the inhabited area.

44. No person shall create any disturbance in the slaughter-house premises. Any person contravening this rule may be removed summarily under the direction of the Veterinary Surgeon, Medical Officer of Health, Meat Inspector or any other person appointed or employed by the local authority as in charge of such a slaughter-house.

45. No person affected with tuberculosis, or any other infectious or contagious disease, leprosy, sores or any other skin disease shall enter the slaughter house. A periodical medical inspection of butchers and flayers shall be obligatory.

46. No person shall rub or cause to be rubbed the inner sides of skins upon the ground within any portion of the slaughter-house. Hides and skins shall not be dragged within the slaughter-house premises except on the hair side.

47. No gut-scraping, tripe cleaning, manufacture of preparing of articles of food for man or for animals, household washing or work of any nature, other than is involved in the slaughter and the dressing of carcasses, shall be permitted in any slaughter-hours except in the adjuncts to the slaughter-house intended for these purposes.

48. Fees shall be levied by the local authority for each animal slaughtered in a public slaughter-house.

PART V. Duties of Butchers and Slaughter-men.

49. Evidence of disease in a carcass shall not be modified or obliterated by washing, rubbing, stripping or in any other manner, except under the direct supervision of the Meat Inspector and in accordance with his instructions.

50. In no case shall the serious membranes (Pleuro and Peritoneum) be stripped, except by or under the direction of the Meat Inspector, and in any such case in which immediate stripping is necessary to preserve the marketability of the carcass the membranes shall not be entirely detached from the carcass until the same have been examined by the Meat Inspector and he has authorised detachment.

51. Notification of intention to slaughter animals for *emergency reasons* shall be forwarded to the Veterinary Surgeon, Medical Officer of Health or Meat Inspector, and so far as practicable all such animals shall be examined at the time of slaughter. If not so examined the carcass, with the whole of the viscera and all parts thereof attached thereto, shall be detained until examined by the Meat Inspector.

In case where such an animal is examined at the time of slaughter, the Meat Inspector may require the carcass, the whole of the viscera and parts thereof, all unless obviously unfit for food, to be detained for 24 hours thereafter to enable a later inspection to be made.

All carcasses of such animals as may subsequently be passed for human consumption shall be ribbed or quartered before being released.

52. Any cloth or instrument that has been used on a tuberculosis carcass or parts thereof, or on a carcass presenting lesions of other disease or suspected of being diseased, shall not again be used until it has been boiled for half an hour in water containing soda.

53. Where the carcass has not been examined by the Meat Inspector at the time of slaughter, the whole of the viscera, parts and organs thereof shall be kept, pending inspection, in such a way as to enable them to be identified, by labelling, or otherwise, with the carcass from which they have been removed.

54. No carcass or part thereof shall be removed or so placed as to prevent its ready identification except with the authority of the Veterinary Surgeon, Medical Officer of Health or Meat Inspector.

PART VI. General duties of and Instructions to Meat Inspectors.

55. It shall be the duty of the Meat Inspector appointed by the local authority in this behalf :—

- (a) to attend at the slaughter-house during the hours fixed ;
- (b) to inspect animals ante-mortem according to the provisions in Part VII of these Rules ;
- (c) to inspect animals post-mortem according to the provisions in Part VII of these Rules ;
- (d) to keep a record of the number and kind of animals slaughtered along with the number and kind of carcasses, parts and organs condemned for different diseases ;
- (e) at the close of each day's work to see that the slaughter-houses under him are thoroughly cleaned and disinfected and the condemned parts and organs duly destroyed and the offal removed to such places as may be appointed by the local authority ;
- (f) generally to enforce the provisions of these Rules.

56. Every effort shall be made to inspect the carcasses and viscera of all animals slaughtered. This examination shall be methodical and as complete as possible in all cases.

57. (a) The Meat Inspector shall have his own knives, wipes and instruments for examining carcasses and parts and organs thereof.

(b) Knives and other instruments that have been used for cutting or examining any diseased organs, gland or tissue shall not again be used for any purpose until they have been disinfected in boiling water or other suitable disinfectant.

58. The carcasses of an animal that is free from disease, and the carcasses and organs which are well nourished, shall be passed, without any undue mutilation, as fit for human consumption.

59. When all portions unfit for human food have been removed from a carcass under the supervision of a Meat Inspector, the remainder of the carcass shall be passed as fit for human consumption.

60. If disease is found in any part of a carcass or in any organ, the whole carcass and all the organs thereof shall be examined for evidence of any repetition of the local condition, or modification of the same in other parts according to the plan outlined in Part VIII of these Rules.

PART III. **Ante mortem inspection**

61. Where practicable it is desirable that all animals shall be inspected before slaughter, the object being to ascertain that each animal, which it is intended to slaughter, is in a satisfactory state of health. In cases of doubt as to the health of the animal the Meat Inspector shall notify the Veterinary Surgeon, if one has been appointed for that purpose, and his instructions shall be observed. Where ante-mortem inspection of animals is not practicable or has not taken place, the butcher shall notify the Veterinary Surgeon or the Medical Officer of Health or Meat Inspector in any case in which he has doubt as to the health of the animal. Immediate steps shall be taken to have the animal examined before slaughter.

62. Such ante-mortem examination shall be made on the premises of the slaughter-house in which the animals are about to be slaughtered and should include :

- (a) examination for evidence of cruelty to animals by over-trucking, over-driving or by any other act ;
- (b) examination for the detection of animals in very emaciated condition or affected with disease in any form.

63. All stock showing signs of pregnancy shall be rejected and removed from the slaughter-house after being marked with some distinguishing mark.

64. No animal with young at foot shall be permitted to be slaughtered.

65. No stock in a febrile condition shall be slaughtered for human consumption in any slaughtering place.

66. No stock showing ante-mortem symptoms of disease or suspected of being diseased shall be slaughtered until all other stock intended to be slaughtered at the slaughter house on the same day have been slaughtered.

PART VIII. **Method of examination of carcasses.**

67. The following instructions indicate the order and method of inspection of all carcasses :—

Section I.—*General Principles to be observed*

1. *Viscera* :—

- (a) All viscera shall be examined as they are removed from the carcass or in such circumstances as will ensure that they are the viscera of a particular carcass.

(b) Every organ and the associated lymph glands shall be examined by the eye and by palpation. When any abnormal condition is observed, the nature and significance of which cannot be determined by such examination, the organ or gland shall be incised and the incision shall be made in such manner as to avoid soiling or contaminating or unnecessarily depreciating the value of any part of the carcass or other organs that may be passed fit for human food.

(c) The efficient examination of lymph glands shall be by multiple incisions into their substance.

2. Carcass :—

- (a) The carcass shall be examined for—
 - (i) evidence of bruising, haemorrhage or discolouration ;
 - (ii) local and general dropsy (oedema) ;
 - (iii) swelling or deformities of bones or joints or swellings or other abnormality in the musculature.
- (b) The serous membranes (pleuro and peritoneum) shall be examined in every case, and in no case shall they be removed nor shall any evidence of disease be modified or obliterated by washing, rubbing, stripping, or in any other manner before examination.
- (c) After the carcass is split, the sternum, ribs, vertebrae and spinal cord shall be examined.
- (d) Incision to be made on each quarter in the musculature near the shoulder joint and near the pubic bone, without mutilating the carcass, for detection of cysts (*Cysticercus bovis* and *cellulosae*)

SECTION II. Detailed instructions for routine inspection of carcasses of cattle and swine.

1. Head :— The head, including (a) the surface and substance of the tongue (which should be loosened but not detached before examination), (b) the palate or roof of the mouth, and (c) the lymph glands of the throat (netropharyngeal sub-maxillary and parotid) shall be examined by the eye and palpation, and the check muscles shall be examined on both sides by a linear incision parallel with the branches of the lower jaw.

Note.— In the case of calves, lymph gland of the head shall only be cut in cases of suspicion.

2. Abdominal Cavity :—

- (a) *Stomach, Intestines and Spleen.*— The outer, and when necessary the inner, surfaces of the stomach and intestines, and the surface and substance of the spleen shall be examined, together with the glands of the stomach and bowel (gastro-splenic and mesenteric) and the web (omentum). The spleen shall be cut where necessary, for the examination of the substance (pulp).

(b) *Liver*.— The surfaces and substance of the liver shall be examined. The associated lymph glands (hepatic) shall also be examined and the bile ducts incised where necessary.

Note.— In the case of calves, the cutting of bile ducts may be omitted.

(c) *Kidneys*.— The lymph glands of the kidneys (renal) and the adrenal glands shall be examined before the removal of the kidneys. Thereafter the kidneys shall be exposed, and the surface examined and, if necessary, the kidneys shall be split by incision and the substance examined.

(d) *Uterus and Ovaries*.— The inner and outer surfaces of the uterus and the substance of the ovaries shall be examined. Where necessary the uterus shall be cut transversely through both horns, and also longitudinally.

(e) *Urinary bladder*.— The outer and inner surfaces of the urinary bladder shall be examined by observation and by cutting only if it shows a diseased condition.

Note.— In reporting upon lesions included in paragraphs 2(a), 2(b) and 2(d) special attention shall be paid as to whether the lesions affect the peritoneal surface or the organ itself. Unless care in this connection is evinced statistical records become misleading.

3. **Thoracic cavity**.— The contents of the thoracic cavity shall be examined before the various organs are separated from each other, and the following examination shall be made :—

(a) *Lungs*.— The lungs shall be examined by the eye by palpation, and, unless obviously diseased they shall be incised at the base. The associated lymph glands (bronchial and mediastinal) shall also be examined, and unless obviously diseased shall be incised.

Note :— In reporting upon lesions included in paragraph 3(a), distinction shall be made between lesion affecting the pleura and those affecting the lung parenchyma.

(b) *Heart*.—The heart sac (pericardium) shall be opened, and the heart examined and if necessary incised.

Note :— In reporting upon lesions in paragraph 3(b) distinction shall be made between lesions of the pericardium, myocardium and endocardium.

4. **Udder**.— The udder shall be examined by observation and palpation, incisions shall be made at the base of the teats, and also into any indurated region in the substance of the gland; the associated lymph glands (supramammary) shall also be incised.

5. **Testicles and penis** :— The outer surface and the substance of the testicles and penis and the superficial inguinal lymph glands shall be examined.

6. Serous membranes :— The lining (serous) membranes of the chest and abdomen (pleura and peritoneum) shall be examined in every case.

Note.— 1. It will be observed that in all cases the following lymph glands must be examined as a matter of routine, viz., (1) Retropharyngeal (in bovines) and submaxillary (in swine); (2) bronchial and mediastinal, (3) hepatic, and (4) mesenteric.

2. In the case of a calf, special attention shall be paid to the navel and to the joints of the carcass.

SECTION III.—Detailed instructions for routine inspection of carcasses of sheep and goats.

The examination is conducted on the same lines as for calves in Section II. The cutting of the heart, head, pulmonary lymph glands and body lymph glands shall be undertaken only in cases of suspicion.

SECTION IV.—Detailed instructions for routine inspection of carcasses of horses, mules and donkeys.

The inspection is conducted on the same lines as for cattle in Section II, but a thorough examination of the nasal mucous membranes shall be made and the head split up longitudinally, and the setum nasi taken out in every case.

SECTION V.—Instructions as to additional inspection where evidence of tuberculosis has been discovered in cattle and swine.

Where, as a result of inspection in accordance with Section II, evidence of tuberculosis has been detected, the carcass and viscera shall be examined in accordance with the following instructions :—

1. The viscera and the associated lymph glands shall be examined for evidence of tuberculosis both in the substance and in the covering membranes (capsules). *The existence of tuberculosis in the lymph gland of an organ shall be held to be evidence of the disease in the organ.*
2. All the usual lymph glands which are examined in meat inspection work (other than those already enumerated), viz., the lower cervical, pre-sternal, sub-dorsal, prescapular, supra-mammary (or superficial inguinal), iliac and sublumbar glands; and if considered necessary, the precrural and popliteal/glands shall be exposed and examined by incision in every case of tubercle. Those glands which, having regard to visible evidence, are least likely to be infected shall be examined/first e.g., if evidence of tuberculosis is found on the pleura the glands of the hind quarter shall be examined before those of the fore-quarter.
3. The carcass of a pig in which lesions of tuberculosis are found in any situation or in any degree shall be split and the vertebrae examined. The kidneys in such a carcass shall be freed, but not necessarily detached from the enclosing fatty tissue, the surface shall be carefully examined, and if lesions are obvious or suspected, incisions shall be made into the substance.

SECTION VI.—Instructions as to the action to be taken in the event of evidence of tuberculosis in cattle and swine.

A. Organs :—An organs shall be seized when tuberculosis exists on its capsule, or in its substance, or in the associate lymph glands.

B. Head :—The head, including tongue, shall be seized if any of the lymphatic glands of the head are affected.

C. Carcass :—The entire carcass and organs and parts thereof shall be seized when the following conditions are found :—

(a) Tuberculosis with emaciation.

(b) Generalised tuberculosis.

Note :—In determining whether the disease is generalised, the judgment shall be based on the sum of the evidence of disease throughout the entire carcass and organs. The following conditions shall be regarded as evidence of generalisation :—

(i) Miliary tuberculosis of both lungs.

Note :—This is subject to the following qualifications : In minor instances of miliary tuberculosis of the lungs, without evidence of tuberculosis elsewhere and provided the miliary tubercles are not numerous and not of recent origin, it may be possible to pass the carcass. But miliary tuberculosis in the lung even in such a case is evidence of previous systemic infection, and the decision as to whether such a carcass should be condemned shall devolve upon the Veterinary Surgeon or the Medical Officer of Health).

(ii) Where lesions are multiple, acute and actively progressive.

(iii) Where there is multiple and widespread infection of the carcass lymph glands.

(iv) Where there are diffuse acute lesions of both serous membranes (plura and peritoneum) and any of the carcass lymph glands are enlarged or contain visible tuberculous lesions.

(v) Where, in addition to the presence of tuberculosis lesion in the respiratory or digestive tracts, there are also lesions present in the substance of any of the following : spleen, kidney, udder (or uterus or ovary) testicle, brain and spinal cord or their membranes.

Note :—Notwithstanding this instruction instances may be found where it would be justifiable to pass the carcass after condemnation of the affected organ. Absence of signs of activity, such as calcification or definite encapsulation would be favourable indications. The decision as to whether such a carcass should be condemned shall devolve upon the Veterinary Surgeon or the Medical Officer of Health.

(vi) Congenital tuberculosis in calves.

2. All cases of tuberculosis not included in the immediately foregoing instructions shall be regarded and treated as localised lesions, and the parts containing the lesions and contiguous thereto shall be condemned.

3. If an organ or portion of a carcass becomes contaminated by tuberculosis material, it shall be treated as if it were a case of localised tuberculosis.

SECTION VII—Instructions as to the action to be taken in the event of evidence of other disease being found in carcasses of cattle, sheep, goats or horses, or swine.

A. The entire carcass and all the parts and organs and also the blood thereof, shall be condemned and seized if evidence of any of the following conditions is found :—

1. Actinomycosis (generalised).
2. Anaemia (if pronounced).
3. Anthrax.
4. Blackleg.
5. Bruising, general extensive and severe, with or without gangrene.
6. Cysticercus bovis (measly beef), if generalised in the meat substance.
7. Cysticerous cellulosae (measly pork), if generalised in the meat substance.
8. Decomposition (general).
9. Dourine.
10. Dropsy (general).
11. Emaciation, general, pathological (associated with disease).
12. Epizootic lymphangitis.
13. Erysipelas, acute swine.
14. Fever (acute).
15. Foot and Mouth Disease (acute).
16. Glanders (or farcy).
17. Haemorrhagic septicaemia.
18. Immaturity, stillborn or unborn carcasses.

Note :— A carcass shall be considered too immature to produce whole-some meat if—

- (a) the meat has the appearance of being water-soaked, is loose, flabby, tears easily, or can be perforated with the fingers ; or
- (b) its colour is greyish red; or
- (c) good muscular development as a whole is lacking, especially noticeable on the upper shank of the leg, where small amounts of serous infiltrates of small oedematous patches are sometimes present between the muscles ; or

(d) the tissue which later develops as the fat capsule of the kidneys is oedematous, dirty yellow or greyish, red, tough and intermixed with islands of fat.

19. Jaundice (pronounced).

20. Johne's Disease (accompanied by emaciation or anaemia).

21. Lymphadenitis, caseous.

22. Malignant catarrhal fever.

23. Malignant neoplasms—unless localised, in situation and effect, to one organ.

24. Mammitis, acute and septic.

25. Melanosis, generalised—or any generalised pigmentation.

26. Metritis, acute septic.

27. Parturition (carcasses of animals having within seven days given birth to young).

28. Pericarditis, septic.

29. Pneumonia, gangrenous.

30. Pyæmia, including joint-ill or umbilical pyæmia.

31. Rabies.

32. Rickets with malnutrition.

33. Rinderpest.

34. Sarcoeysts, if generalised in the musculature and visible to the naked eye.

35. Septicaemia, or septic intoxication.

36. Swine fever.

37. Surra.

38. Tetanus.

39. Trichinosis.

40. Tumours, multiple in musculature.

41. Uræmia (a carcass having a urinous odour).

B. In all cases in which evidence of disease not enumerated in Section VII-A above is found, the organ or portion of the carcass or (organs or portions of the carcass) affected by the disease, and the organs or portions contiguous thereto, shall be condemned.

C. Flesh or organs or carcasses falling under one or more of the following conditions which render them unwhole-some unsound or other-wise unfit for human consumption, shall be condemned :—

1. Diseased conditions caused by bacteria which are pathogenic to the human subject.
2. Diseased conditions caused by animal parasites (resident in edible parts) that are pathogenic to the human subject.

3. The presence of poisonous substances in the flesh. Such poisons may be (i) bacterial poisons or toxins generated in the living body by pathogenic bacteria, or produced post-mortem by putrefactive bacteria, or (ii) mineral or vegetable poisons introduced into the living animal, or added to the flesh as a preservative after death.
4. Structural alterations that render the flesh, organs or the carcass unsightly or otherwise repulsive in appearance.
5. Conditions that render the flesh innutritious.

PART XI—Meat Marking.

68. A local authority may authorise the use of abbreviations of marks of inspection, and such abbreviations shall have the same force and effect as the respective marks for which they are so authorized to be used. This marking shall be made on the spine of the ~~animal~~ and not on the thigh. No meat shall be auctioned or sold without the mark referred to above and such mark or marks shall specify the grade (when prescribed) and the class of the animal slaughtered.

69. No person shall affix or place or cause to be affixed or placed, the inspection marks, copy of representation thereof, to or on any meat or product except the Meat Inspector authorized by the local authority.

70. The ink used for the purpose of meat marking shall be indelible and non-poisonous; and all instruments and marking articles shall be used only by the Meat Inspector himself, and when not in use shall be kept in the safe custody of the Meat Inspector under lock and key.

71. Carcasses to be fit for human organs thereof found by the Meat Inspector on examination to be fit for human consumption shall be marked "Passed" along with an indentifying mark for the kind of meat, such as—

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- (a) G for Goat flesh.
- (b) M for Mutton.
- (c) H for Horseflesh.
- (d) P for Pork.
- (e) B for Beef from Cows, Bulls, Oxen, Heifers, Calves and Steers.
- (f) F for Buffalo beef, and
- (g) any carcass, or part or organ thereof found by the Meat Inspector on examination to be diseased or otherwise unfit for human consumption shall be marked "Condemned"

72. All 'Condemned' carcasses, parts or organs shall be seized by the Meat Inspector and denatured with crude carbolic acid or other prescribed agent, or destroyed by incineration.

73. If the Meat Inspector deems it necessary to hold any carcass or part thereof for further examination, he shall mark the same "Hold".

Should the subsequent inspection show the carcass or any part thereof to be in any way unfit for food, the Meat Inspector shall at the time of such subsequent inspection mark such a carcass or portion thereof as "Condemned" and deal with the same in accordance with the provisions of rule 72.

PART X. Transport and Handling.

74. Every carcass or part or organ thereof on removal from the slaughter house, shall if conveyed in or along a public street or other public place, be suitably and sufficiently covered so as not to be open to the public eye. The conveyance shall be such that the meat is well ventilated, but at the same time invisible. The carcasses should be hung on hooks and not dumped. The conveyance if closed, shall be sealed after loading and the seal broken by the authorities of the local body before unloading.

75. Every person who conveys or causes to be conveyed any meat in a vehicle :—

- (a) shall cause to be kept clean the inside and the covering of the vehicle, the receptacles in which the meat is placed, and such parts of any slings or other implements or apparatus used for loading or unloading as come into contact with the meat or its covering ; and
- (b) if the vehicle is open at the top, back or sides shall cause the meat to be adequately protected by means of clean cloth or other suitable material.
- (c) shall not permit any live animal or any other article to be conveyed in the vehicles at the same time as meat.

76. A person engaged in the handling or transport of meat :—

- (a) shall not permit any part of the meat to come into contact with the ground, and
- (b) shall take such other precautions as are necessary to prevent the exposure of the meat to contamination.

PART XI. Sale of Meat, Meat Shops and Stalls.

77. No carcass portions or organs thereof, other than those duly inspected and found fit for humane food and bearing the mark 'Passed' by the Meat Inspector, shall be sold to the public or exposed for sale at any meat shop or stall.

78. No meat shall be sold or exposed for sale within the limits of a local area except at the shops and stalls, or other premises licensed for the purpose by the local authority.

79. All meat shops and stalls in which it is intended to sell or expose for sale meat of any kind shall be licensed by the local authority on the payment of the fee to be fixed by the local authority.

80. The licenses for meat shops and stall shall be renewed after every twelve months and a renewal fee shall be charged by the local authority.

81. A person selling meat or exposing or offering meat for sale from any shop or stall :—

- (a) shall keep his name and address legibly painted or written on such shop or stall in some conspicuous position, along with the kind of meat in which he may be dealing.
- (b) shall cause such shop or stall (if not placed in an enclosed and covered market place) to be suitably covered over and to be screened at the sides and back thereof in such a manner as to prevent mud, filth or other contaminating substances being splashed or blown from the ground upon any meat on the shop or stall;
- (c) shall cause every counter, slab, vessel or other articles on or in which meat is placed for sale and all knives and other implements used in connection with the meat to be thoroughly cleaned after use and to be kept at all times in a clean condition.
- (d) shall take all such steps as may be reasonably necessary to guard against the contamination of the meat by flies;
- (e) shall not place or cause to be placed any meat on, or within eighteen inches of the ground or floor, unless the meat is placed in a closed cupboard or other adequately protected space not less than nine inches from the ground or floor;
- (f) shall cause all trimmings, refuse and rubbish to be placed in properly covered receptacles kept for the purpose apart from any meat intended for sale.

82. The occupier of any room in which any meat is sold or exposed for sale or deposited for the purpose of sale or of preparation or sale or with a view to future sale, and any persons who knowingly lets any room or suffers any room to be occupied for such purpose, shall cause the floors, walls and ceiling of such rooms to be white washed and cleaned as often as may be necessary to keep it in a clean and proper state.

83. The occupier of any stall or shop in which meat is sold or exposed for sale shall not supply to any purchaser any meat that is not of the nature, denomination, quality and type demanded by the purchaser.

84. No meat sold at shops or stalls licensed for the purpose shall contain any deleterious substances, drug, dye or preservative.

85. Halaled meat and Jhatka meat shall not be put together for sale or exposed for sale in the same shop or stall.

PART XII. Appointment of the Meat Inspectors.

86. No person shall be appointed a permanent meat Inspector unless he is a veterinarian who has had not less than a year's course of training in meat inspection in a recognised Veterinary College and passed the examination prescribed thereof.

PART XIII. Imported Meats

87. No meat, meat product or edible offal shall be imported from foreign countries into India or from places outside the limits of a local area unless it is accompanied by an 'Official Meat Inspection Certificate' issued by a qualified Meat Inspector, duly appointed for the examination of meat in the export country or province, showing that the meat has been examined and found by ante and post mortem examinations to be free from disease and suitable for human consumption.

88. All imported meat shall be open to re-inspection by Meat Inspectors, appointed by the local authority or the local Government, on payment of such import fee and or examination fee as may be prescribed by such local authority or local Government.

89. Carcasses and parts and organs thereof offered for importation into India, from which such tissues as the peritoneum, pleura, lymph glands or the portal glands of the liver have been removed, shall be condemned.

90. Any meat offered for importation into India, which is found upon inspection to be unsound, unhealthful, unwholesome, or otherwise unfit for human food, or to contain any dye, chemical preservative (other than common salt) or ingredient not permitted by rule 84 shall be condemned.

PART XIV. Exported Meats.

91. Persons, firms corporations, or managements in India and their Inspectors are advised to study carefully the regulations and laws appertaining to the importation of meats into Great Britain, Burma, the Dominions and Foreign countries, in order that the shipments forwarded may comply strictly with their requirements and whereby remove the possibility of complaints being received by the Government of India regarding the conditions of Indian meats.

92. Persons, firms, corporations, or managements in India and their Inspectors are advised to study carefully the articles of International Convention of the League of Nations concerning the Transit of Animals, Meat and other products of animal Origin* before entering into any contract of import of any meats with persons, firms, corporations or managements in Great Britain, Burma the Dominions or Foreign countries.

PART XV. General

93. With the approval of the provincial Government any local authority may adopt the whole of this Memorandum, a part or parts or any Clause or Clauses thereof for operation in the area under its jurisdiction, and may make any changes, alterations or additions to suit their local conditions.

PENALTY CLAUSES.

I. If the owner or occupier of a slaughter-house is convicted of an offence under any of the foregoing rules relating to the conduct of business

*League of Nations, No. official C. 78 M. 34.1935. II.B.le Mars, 1935.

of a slaughter-house given in Part IV of the model rules, the local authority may cancel the licence for such slaughter-house.

2. If any person obstructs an officer in the or punished of his duty under any warrant for entry into the premises used as obstructed house, he shall, if the court is satisfied that he obstructed with months he has the discovery of an offence under any of the rule relating to the be an regulation of business of the slaughter-house, or if he has within twelve months previously been convicted of such obstructions, be punished with imprisonment which may extend to three months or with fine which may extend to five hundred rupees.

3. Any person offending against any of the provisions in Parts IV, V, X and XI of the rules shall, where no punishment is expressly provided, be punished with fine which may extend to twenty-five rupees for the first offence and fifty-rupees for the second offence. For the third or subsequent offence, he shall be punished with fine which may extend to one hundred rupees or imprisonment which may extend to two months.

FORM A
(See Rule 21)

FORM OF APPLICATION FOR A LICENCE FOR THE
ERCTION, USE AND OCCUPATION OF PREMISES
AS A SLAUGHTER-HOUSE.

To

The.....*

I, son of caste
age, of do hereby apply to you for a licence
for the purpose of erection, use and occupation of certain premises as a
slaughter-house for a period of and I do hereby de-
clare that to the best of my knowledge and belief the particulars hereunto
annexed contain a true statement of the several items therein set forth
with respect to the said premises.

PARTICULARS

1. Boundaries, area, description and situation of the proposed site to be erected for use and occupation as a slaughter-house.
2. The owner of the premises; Name, Father's name, Caste, Address and Domicile.
3. Nature and conditions of applicant's tenure of premises : (a) For what term, and whether by lease or otherwise; (b) whether applicant is sole owner, lessee, or tenant ; or whether the applicant is jointly interested with any other person or persons and if so, with whom.

*Insert the name and address of the Local Authority